



USAID
FROM THE AMERICAN PEOPLE

CAUCASUS



Governing for
Growth
in Georgia

WATER SECTOR INITIAL ASSESSMENT REPORT

GOVERNING FOR GROWTH (G4G) IN GEORGIA

28 January 2015

This publication was produced by Deloitte Consulting LLP for review by the United States Agency for International Development. Its contents are the sole responsibility of Deloitte Consulting LLP and do not necessarily reflect the views of USAID or the United States Government.

WATER SECTOR INITIAL ASSESSMENT REPORT

GOVERNING FOR GROWTH (G4G) IN GEORGIA
CONTRACT NUMBER: AID-114-C-14-00007

28 JANUARY 2015

DISCLAIMER:

This report is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of Deloitte Consulting LLP and do not necessarily reflect the views of USAID or the United States Government.

DATA

Author(s): Davit Mujirishvili; Mariam Bakhtadze; Ketik Skhireli; Elene Ghubianuri, Gvantsa Pochkhua

Reviewed by: Jake Delphia; Giorgi Chikovani

Project Component: Water Resource Management Component: USA10725-01-01-3000

Practice Area: Freshwater Resources Management

TABLE OF CONTENTS

ACRONYMS.....	3
EXECUTIVE SUMMARY	6
CHAPTER 1: INTRODUCTION AND BACKGROUND INFORMATION	7
A. Introduction	7
B. Background Information	8
C. Legal Framework	10
1. General overview of main legal acts	12
2. International Agreements	15
3. EU-Georgia Association Agreement	16
D. Institutional Framework	19
CHAPTER 3: FRESH WATER RESOURCES DATA MANAGEMENT	21
A. Water Quality and Hydrological Monitoring Network	21
CHAPTER 4: WATER USE	23
B. Potable Water Supply	24
C. Water use for Irrigation.....	27
D. Industrial Water Use.....	29
E. Water Use for Electricity Generation.....	29
F. Water Use Conflict Case Studies.....	31
CHAPTER 5: CONCLUSION AND NEXT STEPS	35
ANNEXES	36
ANNEX 1 International assistance in water sector	37
ANNEX 2 Potable water supply licensed companies as OF January 2014	42
ANNEX 3 Maps.....	43
ANNEX 4 Statistical form 4-I-01	48
ANNEX 5 Number of bodies reporting water use by field of entrepreneurial activities	50
ANNEX 6 Tariffs approved by the GNERC	51
ANNEX 7 List of major UWSCG non-residential clients.....	51
ANNEX 8 Structure of Manufacturing Sector	52
ANNEX 9 Proposed electricity generation hydropower plants up to 2020.....	53

ACRONYMS

AA	Association Agreement
ADB	Asian Development Bank
ALFS	Annual Labor Force Survey
BAT	Best Available Technology
BBSAP	Strategic Action Plan for the Protection and Rehabilitation of the Black Sea
BMZ	Federal Ministry for Economic Cooperation and Development
BTM	Business Technology Management
BWC	Batumi Water Company
CCGT	Combined Cycle Gas Turbine
CENN	Caucasus Environmental NGO Network
CM	Cubic Meter
CzDA	Czech Development Agency
CZK	Czech Koruna
DCFTA	Deep and Comprehensive Free Trade Area
EC	European Commission
ECBSea	Environmental Collaboration for the Black Sea
ECON	A subsidiary of Poyry, Norwegian Consulting Company
EDSI	Energy Dependence Seasonality Index
EECCA	Eastern Europe, Caucasus and Central Asia
EIA	Environmental Impact Assessment
ELV	Emission Limit Values
EMBLAS	Environmental Monitoring in the Black Sea
ENVSEC	Environment and Security Initiative
EPIRBP	Environmental Protection of International River Basins Project
EPR	Environmental Performance Review
EQS	Environmental Quality Standards
ESCO	Electricity System Commercial Operator
EU	European Union
EUR	European Euro
FAO	Food and Agriculture Organization of the United Nations
G4G	Governing for Growth
GEF	Global Environment Facility
GEL	Georgian Lari
GES	Good Ecological Status
GIEC	Georgia International Energy Corporation
GIS	Geographic Information System
GNERC	Georgian National Energy and Water Supply Regulatory Commission
GoG	Government of Georgia
GOGC	Georgian Oil and Gas Corporation
GWH	Gigawatt Hour
GWP	Georgia Water and Power
Ha	Hectare
HPP	Hydro Power Plant
IFAD	International Fund for Agricultural Development
ILMD	Irrigation and Land Market Development Project
IWRM	Integrated Water Resources Management

JSC	Joint Stock Company
KAEP	Kura-Aras Environment Program
km³	Cubic kilometer
kWh	Kilowatt-hour
LEPL	Legal Entity under the Public Law
LLC	Limited Liability Company
m³	Cubic Meter
MA	Ministry of Agriculture
MDG	Millennium Development Goal
MENRP	Ministry of Environment and Natural Resources Protection
MLHSA	Ministry of Labour, Health and Social Affairs of Georgia
mIn.	Million
MRDI	Ministry of Regional Development and Infrastructure
MS	Member States
MSDP	Municipal Services Development Project
MSFD	Marine Strategic Framework Directive
Mt	Metric Ton
MVWC	Marneuli Village Water Company
MW	Megawatt
MWC	Mtskheta Water Company
MWh	Megawatt-hour
NATO	North Atlantic Treaty Organization
NBSAP	National Biodiversity Strategy and Action Plan
NEA	National Environmental Agency
NEAP	The National Environmental Action Program
NGO	Non-Governmental Organization
OCGT	Open Cycle Gas Turbine
OECD	Organization for Economic Co-operation and Development
OSCE	Organization for Security and Co-operation in Europe
QWC	Qobuleti Water Company
PF	Partnership Fund
PPD	Public Private Dialogue
PRTR	Pollutant Release and Transfer Register
RBM	River Basin Management
RWC	Rustavi Water Company
SCWSE	State Commission on Water Supply and Energy
SWC	Sachkhere Water Company
TA	Technical Assistance
TACIS	Technical Assistance to the Commonwealth of Independent States
TAM	Tbilisi Aircraft Manufacturing
TPP	Thermal Power Plant
TWh	Terawatt-hour
UASCG	United Amelioration Systems Company of Georgia
UBSS	Upgrade Black Sea Scene Project
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNDP	United Nations Development Program
US	United States
USAID	United States Agency for International Development

USD	United States Dollar
USSR	Union of Soviet Socialist Republics
UT	Urban Transport
UWSCG	United Water Supply Company of Georgia
WB	World Bank
WFD	Water Framework Directive
WHO	World Health Organization
WIC	Women's Information Center
WQS	Water Quality Standards
WSS	Water Supply System

EXECUTIVE SUMMARY

Georgia is a rich country in terms of available water resources. However, water resources are distributed unevenly, 75% of water resources are located in western part of Georgia and 25% of water resources are located in eastern part, thus eastern regions of Georgia frequently suffer from water shortages. Due to insufficient monitoring of surface and ground waters, data on quality and quantity of country's surface and ground waters is limited. Untreated municipal wastewater is a major polluter of surface waters. Other sectors strongly affecting surface water quality are: agriculture and industry (e.g. mining, oil production and food industry).

As economic growth and modern life progresses, demand on freshwater availability will grow. Growing demand on water availability comes from agriculture sector (irrigation), domestic water supply and sanitation, industry and energy generation. Action is needed to reduce the general trends of increasing water shortages, deteriorating water quality and growing stresses on freshwater ecosystems. By rationally managing watersheds for all ecological services, economic goals dependent on water use can be achieved while minimizing irreparable damage to the environment and human consumption needs.

Freshwater resource management policy and strategy development is a significant weakness in Georgia. The water sector is managed according to a model based on administrative boundaries in Georgia. National freshwater management policies, defined by numerous legislative acts and water related responsibilities, are scattered among various institutions. The government of Georgia (GoG) acknowledges a strong need for reform of the current water legislation and water resources management system¹. Thus, in order to achieve and maintain the appropriate quality of water resources, Georgia intends to replace the existing administration principles in water resource management and introduce the approach of integrated river basin management.

The recently developed draft Law on Water Resources Management is meant to achieve this objective. The principles of new draft law are in line with principles of Integrated Water Resources Management (IWRM) and the requirements of the European Union (EU) Water Framework Directive (WFD). It introduces the river basin approach to water resources management, permitting and licensing for water use and discharge and clarifies the roles of the different State agencies involved in the management of the water resources. The draft law is undergoing internal revision within the GoG and expected to be submitted to the Parliament of Georgia for approval by spring, 2015.

There is a need to design and adapt institutions to create an integrated approach to policy analysis and to integrated water resources management for specific environmental and socio-economic settings. The role of Government needs to be clearly defined, with a distinction between the functions of standards, regulation setting and control on the one hand, and direct management on the other. It is also essential to define the role of government at all levels as well as the roles of the private sector and other stakeholders.

This report briefly reviews the water sector in Georgia, including an overview of existing legislation, provides information of main water users, activities, services and existing conflicts in the water sector illustrated by case studies, and lastly mapping of relevant institutions and their inter-relations and responsibilities in managing water resources.

Below is the list of top 10 findings of initial water sector assessment report:

- a) There is no state water policy document in Georgia. Current water management system lacks clear vision, consistency and result orientation.
- b) Lack of comprehensive and harmonized legislation. Georgia's water-related legislation is inconsistent, contradictory and fragmented throughout the wide range of legal acts.

¹ The second National Environmental Action Plan (NEAP) prepared for the period of 2012-2016 and approved by GoG proposes a number of activities to address water concerns providing long-term goals and short-term targets. The NEAP 2 recommends revising and updating the current water legislation.

- c) The draft Water Resource Management Law is undergoing internal revision within the GoG and expected to be submitted to the Parliament of Georgia for approval by spring, 2015.
- d) Water related responsibilities are scattered among various institutions. However, coordination between above institutions (governmental agencies) is weak and requires strong leadership.
- e) The water sector is managed according to a model based on administrative boundaries in Georgia. The draft Water Resource Management Law intends to replace the existing administration principles in water resource management and introduce the approach of integrated river basin management.
- f) The water monitoring network has decreased significantly since collapse of Soviet Union (number of hydro monitoring stations reduced from 170 to 40). No ground water monitoring has been conducted since 2004. Due to insufficient monitoring of surface and ground waters, data on quality and quantity of country's surface and ground waters is limited.
- g) The quantity of renewable water resources is enough to meet current demand of water in Georgia. However, due to inadequate planning and poor water management, shortages and conflicts over water usage between different water users still exist.
- h) GoG plans significant expansion of hydropower generation in Georgia. In 2014 Georgian energy generation has increased almost by 116 megawatt (MW). It is expected that this number will reach 1,630 MW by 2020 (meaning that by 2020 hydropower generation will increase by 58% as compared to 2014).
- i) Irrigated land area is expanding rapidly (by 2014 irrigated land area covered around 88,400 ha); according to different expert assumptions, it is assumed that by 2020 irrigation land area will cover around 278,000 ha.
- j) Georgian legislation does not envisage adequate mechanisms for stakeholder engagement in water management planning process.

This Water Sector Initial Assessment Report consists of five main chapters:

- Chapter 1:** Provides an overview of proposed work under Governing for Growth (G4G) project and intended outcomes.
- Chapter 2:** Provides information on existing enabling water sector legislation and describes the water sector institutional framework. It also provides information on Georgia's commitment under EU Association Agreement to approximate the country's water legislation with requirements of water framework directives.
- Chapter 3:** Provides information on freshwater data management and reporting issues.
- Chapter 4:** Describes main water users in Georgia including drinking water supply systems, irrigation, electricity generation and industry.
- Chapter 5:** Discusses the main gaps and weaknesses in the water sector and recommends issues which will be further discussed in more details in a future Green Paper to be supported by G4G.

CHAPTER 1: INTRODUCTION AND BACKGROUND INFORMATION

A. INTRODUCTION

This assessment report intends to serve as an instrument in creating and improving a sustainable national water resource management system. Main gaps identified by this report showcase the need of improvement of the enabling water resource management legislation and shifting towards river basin management, improving water related data management and flow network while promoting public private discussions in the planning and policy-making process. These gaps are discussed in more detail in Chapter 5.

This report proposes the development of a Green Paper that will detail the Georgian water sector weaknesses and development opportunities. It is assumed that a Georgian water sector Green Paper will discuss gaps pertaining to the water sector in more detail than this assessment report as well as present a more comprehensive range of ideas on improving of water sector. The Green Paper will create the basis for inviting interested stakeholders for wide public debate and discussion.

B. BACKGROUND INFORMATION

The purpose of the Governing for Growth (G4G) project is to improve Georgia's economic governance and leadership, particularly in the areas of natural resources, energy sector and human and institutional capacity. G4G is comprised of five components, one of which is improving water resource management across multiple competing interests.

This report was prepared within the frame of Component 3 of the G4G project. Component 3 focuses on unregulated use of freshwater resources and the resulting threat to the quality and quantity of water available for long-term economic growth and resource-based conflict. Water resource management policy and strategy development is a significant weakness in Georgia's economic governance as the country does and will increasingly draw on water resources to develop the energy, agricultural, manufacturing and recreational sectors in Georgia. By rationally managing watersheds for all ecological services, the economic goals dependent on water use can be achieved while minimizing irreparable damage to the environment and human consumption needs.

This report was prepared by G4G with the objective of providing a full and realistic picture of the existing water resource management system in Georgia. It provides an analysis of the current situation in the water sector and highlights the most needed interventions in the water sector of Georgia.

Definition of terms:

Per United States Agency for International Development (USAID) contract Agreement No AID-114-C-14-00007, one of the tasks of G4G program is to initiate and support dialogue between the GoG, the private sector and civil society related to sustainable freshwater resource management.

The Water Framework Directive (WFD) 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, is a European Union (EU) directive which commits EU member states to achieve good qualitative and quantitative status of all water bodies (including marine waters up to one nautical mile from shore) by 2015. The WFD provides definition of terms for water bodies (such as: inland surface waters, transitional waters, coastal waters and groundwater). There is no definition of '**freshwater**' provided neither by WFD nor by the Georgian Law on Water Resources Management.

The US Geological Survey defines '**freshwater**' as naturally occurring water on the Earth's surface in ice sheets, ice caps, glaciers, icebergs, bogs, ponds, lakes, rivers and streams, and underground as groundwater in aquifers and underground streams. For achieving its goals G4G will further use definition of freshwater provided by US Geological Survey.

As part of this review process, several documents have been examined and assessed. Moreover, G4G has collected and assessed a number of projects conducted in the period of 2003-2014 focused on various elements of river basin management. A list of various donor-funded, implemented and on-going projects is provided in Annex 1. Up to 27 donor-funded projects and 20 investment projects were identified during the assessment period. The focus areas of the projects included support to GoG in establishing and development of the water monitoring system, assessment of pilot river basins, development of pilot river basin management plans/integrated natural resources management plans, water supply and irrigation system rehabilitation, etc.

This report intends to provide preliminary information on the sector status, including an overview of existing activities, existing conflicts in the water sector illustrated by case studies and mapping of relevant institutions and their inter-relations and responsibilities in managing water resources.

This report should be followed-up with a detailed analysis and subsequent proper policy development and planning of the sector.

Some Facts about Freshwater Resources of Georgia:

Georgia is the richest country in the South Caucasus in terms of available water resources. Distribution of water resources in Georgia is uneven:

- 75% of water resources are located in western part of Georgia and
- 25% of water resources – located in eastern Georgia

Georgia has 860 lakes and reservoirs, with 74% of total storage in five: Paliastomi, Sagamo, Paravani, Ritsa and Tabatskuri

Natural supply of fresh ground water of the country is about 18,000 million cubic meters. The whole prognosticate and exploitation supplies are about 10,600 million cubic meters.

Source: www.moe.gov.ge
and

Environmental
Performance Review
(EPR), 2003, United
Nations Economic
Commission for Europe
(UNECE), GENEVA

Freshwater Resources of Georgia

Georgia has significant water and groundwater resources.

Georgia has 25,075 rivers with a total length of 54,768km, 99% of which are no more than 25km in length.²

The Likhi ridge divides Georgia into two main river basin groups: the Black Sea Basin and the Caspian Sea Basin. Main rivers of the Black Sea Basin (from north to south) are the Enguri (beside the Autonomous Republic of Abkhazia), Rioni and Chorokhi.

Alazani rivers flow either into the rivers of the Russian Federation or directly into the Caspian Sea. The rivers of the Kura River basin flow to the east of the country, the main rivers (from north to south) being the Alazani, Iori and Kura. These rivers rise in Georgia or Turkey, flow further through Azerbaijan and finally enter the Caspian Sea³.

Despite the fact that Georgia has significant water resources, these resources are unevenly distributed throughout the country. The population of eastern Georgia frequently suffers from water shortages, while the western regions are subject to severe flooding due to a frequent rainfall.

Georgia is rich with ground water resources in the limestone of Great Caucasus and many aquifers, especially in the lower slope of Great Caucasus and on the plateau of Akhalkalaki and Marneuli. The total debit of these springs is 340 m³ in a second. Renewable groundwater resources are estimated at 573 m³/s, of which 285 m³/s are usable.⁴

There are 43 dams in Georgia and the country uses water primarily for hydropower generation and irrigation. Enguri dam is the largest one, with a reservoir capacity of 1,093km³. Out of 31 dams built for irrigation purposes, with a total capacity of 1 km³, only 782 million m³ are functional. Georgia has no practice of reusing treated wastewater.⁵

² Aquastat, *Water Report 2008: Irrigation in Middle East Region in Figures*, Karen Frenken, FAO Land and Water Division, Rome 2009, pg. 176.

³ Second Environmental Performance Review for Georgia; UNECE, 2010.

⁴ Web-site of the Ministry of Environment and Natural Resources Protection; http://moe.gov.ge/index.php?sec_id=42&lang_id=ENG.

⁵ Aquastat, *Water Report 2008*, pg. 177.

CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK

C. LEGAL FRAMEWORK

The Georgian water-related enabling legislation is based on the Constitution of Georgia, ratified international agreements, laws of Georgia and other acts. There are more than 15 major laws in Georgia that significantly influence the protection and management of water resources and the associated environmental concerns. Out of them, the most important document regulating water resource management in Georgia is the **Water Law of 1997**.

The Water Law mainly provides for protection and use of surface waters and practically leaves out legal regulation of groundwater as well as coastal waters. Groundwater management is regulated by the **1996 Law on Mineral Resources**.

The main legislative change was brought to Georgia's water-related environmental legislation with the 2004 Tax Code of Georgia and 2005 Law on Licenses and Permits. According to the Tax Code, all taxes for environmental pollution (including for water pollution) were abolished. The Law on Licenses and Permits further radically reduced the number of activities, classified as environmentally sensitive and requiring management and supervision. The permitting system for surface water abstraction and discharges was removed.

These are the examples of why the Water Law of 1997 fails to provide good basis for regulation of management of water resources. In addition, current water-related legislation practically **does not** provide for comprehensive and clear regulation of such important and diverse issues as:

- water resources management;
- pollution prevention tools;
- ownership, the rights of ownership and use of water bodies;
- water cadaster;
- integration of water protection requirements and restrictions in regard to land use and spatial development;
- jurisdiction of regional and local self-governing bodies over water resources,
- and many other issues typically found in national water resource management legislation.

Overall, Georgia's water-related legislation is inconsistent, contradictory and fragmented throughout the wide range of legal acts, of which the most important ones are listed below:

- Law of Georgia "On Environmental Protection" (1996) ⇒ provides for establishment of environmental quality (including water quality) norms (standards);
- Law of Georgia "On Mineral Deposits" (1996) ⇒ considers groundwater as part of mineral deposits and regulates all aspects of groundwater use and to certain extent - groundwater protection as well;
- Law of Georgia "On System of Protected Areas" (1996) ⇒ provides legal ground for establishment of protected area categories (including marine protected areas and water bodies within terrestrial protected areas);
- Laws of Georgia "On Health Protection" (1997) and "On Public Health" (2007) ⇒ provide for establishment of sanitary-hygienic requirements, norms and rules with regard to waters and water quality;
- Marine Code of Georgia (1997) and Law of Georgia "On Marine Space" (1998) ⇒ provide for pollution prevention and control measures of coastal and territorial waters;
- Law of Georgia "On Regulation and Engineering Protection of the Seashores, Reservoirs and River Banks" (2000) ⇒ regulates engineering protection for seashores and river/reservoir banks against abrasion, floods etc.;
- Law of Georgia "On Recognition of Ownership Rights on Land Plots Being under the Usage of Natural Persons and Legal Entities of Private Law" (2007) ⇒ regulates legalization of ownership rights on land plots (including water bodies/water lands) which are being used by natural and legal persons in unlawful way;

- Laws of Georgia “On Conservation of Soils and Reclamation and Improvement of Soil Fertility” (2003), “On State Control for Environment Protection (State Environmental Control)” (2005), “On Environmental Impact Permit” (2007) and “On Ecological Expertise” (2007) ⇒ provide for legal streamlining in a number of water-related important aspects (e.g. Environmental Impact Assessment (EIA) etc.);
- Organic Law of Georgia “On Self-governance” (2006) ⇒ provides for creation of certain rights of local authorities with regard to water resources.

Hence, the current water resources management lacks consistency, efficiency and integrity with other sectors and therefore needs overall reorganization both with regard to institutional and regulatory aspects. There is a strong need for reform of the current water legislation and the current system of water resources management.

GoG acknowledges that water management system is outdated and there is need for new water legislation to achieve sustainable management of water resources. With this in mind, GoG requested UNECE⁶ to provide support in developing a new Water Resource Management Law in October 2009. As a result of this cooperation between GoG and UNECE, the draft law on Water Resource Management of Georgia has been drafted and is currently under discussion.

The new draft Water Resource Management law is in line with principles of IWRM⁷ and the requirements of the EU WFD. It introduces the river basin approach to water resources management, permitting and licensing for water use and discharge and clarifies the roles of the different State agencies involved in the management of the water resources. In the draft law, special attention is paid to ensuring access to safe water and the comprehensive monitoring of water quality, which should have a direct, positive impact on public health in the long run.

The draft Water Resource Management Law was circulated to relevant GoG ministries for revision and clearance. Initially it was assumed that after positive responses from GoG ministries are received, Ministry of Environment and Natural Resources Protection (MENRP) would proceed with submission of draft law to the Parliament of Georgia for approval by spring, 2015. However, inter-ministerial agreement on initial approval of draft Water Resource Management Law remains pending due to the lack of consensus between respective ministries (namely Ministry of Energy and Ministry of Agriculture) on introduction of the permitting system (water discharge and abstraction) and payment issues.

⁶ UNECE is the strategic partner of EU Water Initiative Component for supporting the Policy Dialogue processes on IWRM. Policy Dialogue is the main operational instrument of the EU Water Initiative for Eastern Europe, the Caucasus and Central Asia, launched at the World Summit on Sustainable Development in Johannesburg in 2002 with the aim to support the implementation of the water-related Millennium Development Goals (MDGs).

⁷ IWRM is an empirical concept which was built up from the on-the-ground experience of practitioners. After Agenda 21 and the World Summit on Sustainable Development in 1992 in Rio the concept was made the object of extensive discussions as to what it means in practice. The Global Water Partnership's definition of IWRM is widely accepted. It states: 'IWRM is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. According to the UN Water Report 2012 "Status Report on the Application of Integrated Approaches to Water Resource Management" 65% of countries have developed integrated water resources management plans and 34% report an advanced stage of implementation of those plans (pg. 17).

Law Adoption Process:

The Ministry of Environment and Natural Resources Protection (MENRP) sends the draft law on environment and natural resources to ministries that are interested and affected for consultation. The draft Water Resource Management Law was provided to the following ministries for revision and feedback: Ministry of Agriculture, Ministry of Energy, Ministry of Health, Labor and Social Affairs and Ministry of Regional Development and Infrastructure. Note: a draft is always sent to the Ministry of Finance and the Ministry of Economy and Sustainable Development. If there are objections or concerns by other ministries, the sponsor of the law (in this case MENRP) receives official letter with detailed description of comments, which the MENRP may or may not integrate in the draft law.

Once this informal consultation process is completed, the revised draft law is sent to the Ministry of Justice, which reviews the draft law and the arguments provided by separate letter. The Ministry of Justice advises the MENRP to comply with suggestions from other ministries. The draft law is then forwarded back to the MENRP for adjustments, following which it is resubmitted to the Ministry of Justice. The consent of the Ministry of Justice is required for the draft law to move forward.

Once a positive conclusion has been granted by the Ministry of Justice, the final draft is presented to the Government for clearance. If there are no objections from GoG, the draft law is submitted to the Parliament for approval.

1. General overview of main legal acts

Constitution of Georgia

The highest legal document in Georgia is the Constitution of Georgia. According to it, all citizens are obligated to protect natural and cultural environment. The state ensures rationalized use of natural resources in order to ensure the sustainable development of the country and safe environment for human health.

Water Law (1997) of Georgia

The main objectives of the Law are as follows:

- a) Ensure pursuance of the uniform State policy in the sphere of water protection and use;
- b) Protect water bodies (including the Black Sea) and use rationally water resources with due regard to the interests of the present and future generations and the principles of sustainable development;
- c) Meet the demands of the population for drinking water as a priority task;
- d) Sustainability and sustainable use of water fauna;
- e) Prevent adverse impact on water and mitigate such impacts effectively;
- f) Ensure protection of the state interests of Georgia in the sphere of water protection, use and international trade in water;
- g) Ensure the compliance of commercial production of water with international principles and standards;
- h) Protect lawful rights and interests of natural and legal persons in the sphere of water protection and use.

The Law determines the water status of Georgia as follows:

Water available on the territory of Georgia is the state ownership to be only provided in use. Any action that may directly or indirectly prejudice the state's right of water ownership shall be prohibited. The right of ownership in land shall not envisage the right to use the running, surface or underground waters available on this land.

Under the law, water bodies of Georgia according to their location on the surface and in the entrails, the resources formation and use peculiarities are divided into the surface and underground.

The aggregate of all water available in all the water bodies of Georgia forms the water state fund.

The following belong to the water state fund of Georgia:

- a) Rivers, lakes, reservoirs, other natural and man-made surface water storage basins available and flowing throughout Georgia, as well as waters of canals and ponds;
- b) Underground waters (including springs and waters of the continental shelf);
- c) Glaciers and the permanent snow cover;
- d) Swamps;
- e) Territorial waters of Georgia;
- f) Waters of a special economic zone.

The Law also determines the classification of water in following water groups:

- a) of particular state significance;
- b) of state significance;
- c) of local significance.

The group of the particular state significance includes:

- a) Glaciers and the permanent snow cover;
- b) Surface water bodies of a particular scientific and aesthetic value.

The group of the state significance includes:

- a) Swamps;
- b) Bodies of the surface water which Water Fund lands are located on the territory of two or more administrative-territorial units (regions) of Georgia;
- c) Trans-border water bodies;
- d) Territorial waters and waters of the special economic zone;
- e) Substantial underground water resources.

The group of local significance includes all water bodies available on the territory of Georgia.

Under the law, water usage is divided into the following types:

- a) The abstraction or transfer of water from a water body, its impoundment, the artificial change of water level or flow direction;
- b) The removal of substances from water bodies or application of substances and discharge of waste waters into them;
- c) The creation and operation of multipurpose structures which influence the condition of water;
- d) The study of ground waters.

Water utilization is categorized in general and special water-use forms. Georgian legislation may also provide for other types of water use.

Under the law, information relating to water reserves, resources and quality status, the groundwater body's mining-technical conditions and other properties or parameters constitute ownership of the subject at whose expense the information was obtained.

Law on the Status of Protected Areas

The purposes of planning, categorizing, establishing and operation of protected areas in the territory of Georgia are as follows:

- a) Guarantee long-term protection of biogeographic units of Georgia to ensure permanent development of natural processes;
- b) Protect and restore natural ecosystems, landscapes and wildlife;
- c) Ensure genetic conservation of endangered species included in the Red List of Georgia⁸ and preserve biodiversity;
- d) Preserve unique and rare natural organic and non-organic features;

⁸ Endangered species in Georgia are protected by Georgian law on Red Book and the Red List. The Red List of Georgia includes the list of endangered species which are spread in Georgia. It provides information on conservation status of wild species in the country and ensures protection, conservation and restoration of the endangered species on the territory of Georgia.

- e) Protect the areas prone to erosion, flash floods, floods, avalanches, landslides as well as areas of surface and underground water formation, flow and discharge from anthropogenic influence.

This law prohibits anthropogenic impact on the protected areas by limiting various types of economic activity (including construction, water extraction and discharge, etc.) in different categories of protected areas.

Law on Environmental Protection

This Law regulates the legal relationship between the bodies of the State authority and the physical persons or legal entities (without distinction as to ownership and legal form) in the scope of environmental protection and the use of nature on the entire territory of Georgia, including its territorial waters, airspace, continental shelf and special economic zone.

Currently the law does not cover the irrigation sector, though an amendment to this law is being prepared that will require issuance of licenses for water intake and water management activities.

The main objectives of the Law are as follows:

- define the principles and standards of legal relationship in the scope of environmental protection;
- protect basic human rights provided by the Constitution of Georgia in the scope of environmental protection;
- ensure the protection of the environment and rational use of nature by the State;
- preserve biological diversity, rare, endemic and endangered species of flora and fauna typical for the country, protect the sea and ensure an ecological balance
- ensure the conditions required for sustainable development of the country

The main tasks of the Law are as follows:

- Protect and preserve the environment, so that it is safe for human health;
- Provide legal groundwork for the protection of the environment against all harmful impacts; provide legal groundwork for the preservation and improvement of the quality of the environment;
- Ensure optimum mutual compatibility (harmonious combination) of ecological, economic and social interests of society;
- Ensure the administration of the use of natural resources, taking into consideration potential possibilities and the principles of sustainable development.

The purview of Law includes organized activities affecting an indefinite number of people and posing a significant risk to human life and health.

The Law provides a complete list of activities subject of state ecological expertise and the legal framework for the public participation and awareness in issuing environmental permits, state ecological expertise required for a permit, environmental impact assessments and decision-making on issuing environmental permits.

The objectives of the Law are as follows:

- Protect human health, natural surroundings, material assets and cultural heritage in the course of the activity;
- Ensure the basic right of a citizen provided by the Constitution of Georgia to obtain objective information on his or her work and on natural surroundings;
- Ensure participation of the public in the decision-making carried out by the State in the field of environmental protection, in order to promote democratic development of the country;
- Take into consideration ecological, social and economic interests of the State and public in the decision-making, connected with the implementation of the activity.

The Law on Licenses and Permits

This Law establishes the list activities that require licenses and permits. It identifies the types of licenses and permits, procedures their amending or canceling.

Borrowing of rock and earth from queries and extraction of gravel from river beds are subject of resource use licensing.

2. International Agreements

The Republic of Georgia recognizes and abides by several bilateral agreements with neighboring countries:

- Treaty on Water Consumption in Boundary Rivers, Rivulets, and Springs of the Union of Soviet Socialist Republic and Turkish Republic Concerning the Issues of Irrigation, Water Supply and Regulation of the Rivers of Araks, Chorokhi, Kura.
- Agreement between the Government of Georgia and Turkish Republic in the Field of Environmental Protection (1997).
- Protocol on Mutual Understanding between the Ministry of Environmental Protection and Natural Resources of Georgia and the Ministry of Energy and Natural Resources of Republic of Turkey with the Purpose of Surveillance of Transportation of River Pumps of the Chorokhi River.
- Memorandum on Mutual Understanding between the Ministry of Environment of Georgia and State Committee on Ecology and Control over Nature Management of Azerbaijani Republic Concerning Cooperation in Development and Realization of Pilot Projects on Monitoring and Evaluation in the Basin of the Kura River (16.09.1997).
- Agreement between the Government of Georgia and Azerbaijani Republic in the Field of Environmental Protection (18.02.1997).
- Protocol on the Results of Negotiations between Governmental Delegations of Georgia and Azerbaijan Republic on the Use of Water Resources (27.12.1997).
- Agreement between State Committee on Irrigation and Water Economy of the Republic of Azerbaijan and Department of Management of Melioration Systems of Georgia on the Use of the Reservoir of Djandara.
- Protocol of the Agreement between Georgian Soviet Republic and Armenian Soviet Republic on Water Intake from the Debeda River (5.10.1971).
- Agreement between the Governments of Georgia and Armenian Republic in the Field of Environmental Protection (1997).

In addition to the aforementioned legal acts, Georgia has signed and ratified a number of environmental conventions that are presented below:

- Convention on the Protection of the Black Sea Against Pollution. The Parties are determined to act with a view to achieve progress in the protection of the marine environment of the Black Sea and in the conservation of its living resources. The Parties to the Convention are Bulgaria, Georgia, Romania, Russia, Turkey and Ukraine.
- United Nations Framework Convention on Climate. The Parties to this Convention acknowledge that change in the Earth's climate and its adverse effects are a common concern of humankind. The Parties are concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind.
- Convention on Biological Diversity. The objectives of this Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding. States have, in accordance with the Charter of the United Nations and the principles of

international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

- The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention). According to the Aarhus Convention, the public, both in the present and in future generations, has the right to know and to live in a healthy environment and therefore all the parties shall guarantee access to information and justice and participation in decision-making for the public.

3. EU-Georgia Association Agreement

On June 27, 2014 Georgia and the European Union signed Association Agreement (AA), including the Deep and Comprehensive Free Trade Area (DCFTA). Georgia ratified the AA on July 18, 2014.

Georgia undertakes to gradually approximate its legislation to the relevant EU legislation and international instruments within the stipulated timeframes (starting from the date of entry into force).⁹

Under Article 302 of AA - Cooperation shall aim at preserving, protecting, improving and rehabilitating the quality of the environment, protecting human health, sustainable utilization of natural resources and promoting measures at international level to deal with regional or global environmental problems, including in the areas of:

- (c) Water quality and resource management, including flood risk management, water scarcity and droughts as well as marine environment;

In the annexes to AA obligations under relevant EU directives and timeframes are provided (see table below):

⁹ With signing of the Association Agreement, the Government of Georgia has made a commitment to bring its laws and practices closer to those of the European Community, including the water protection/management requirements. In order to facilitate the implementation of the Association Agreement, the MENRP, through support from EU, initiated a process of developing the road-map for implementation of specific requirements of AA. It is envisaged that the roadmap will provide detailed schedule for further actions which GoG should undertake in order to meet AA requirements in the field of water resources management. G4G expects that above roadmap will suggest to GoG an approach to implement some the policy related changes including defining specific water management related sub-laws. Once the roadmap is reviewed and cleared by the GoG, G4G can proceed with further support to the GoG in implementing policy reforms.

Table 1 EU Directives and Timeframes per AA

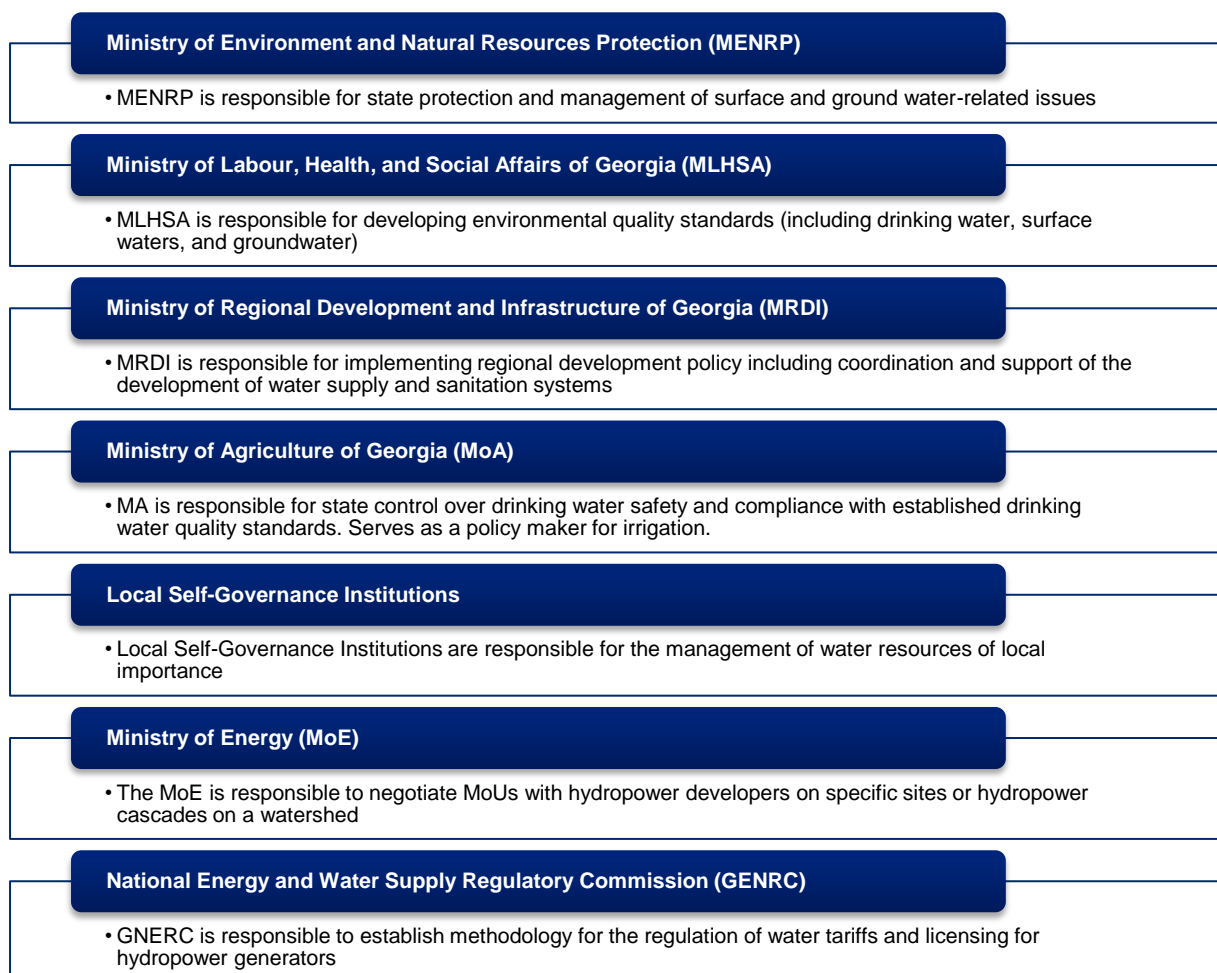
Directive	Article	Task	Timetable
Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage	Article 11	adoption of national legislation and designation of competent authorities	Shall be implemented within three years of the entry into force of this Agreement.
	Articles 5, 6, 7, Annex II	establishment of rules and procedures aimed at preventing and remedying of damage to the environment (water, land, protected species and natural habitats) based on the polluter-pays principle Provisions related to the evaluation of remedial options by using Best Available Technologies (BAT) shall be implemented within the same timeframe as indicated in the respective directives	Shall be implemented within four years of the entry into force of this Agreement.
	Article 3(1)(a) and Annex III	Establishment of strict liability for dangerous occupational activities. To read in conjunction with respective directives indicated in this Chapter.	Shall be implemented within four years of the entry into force of this Agreement.
	Articles 5, 6, 7, 8, 9 and 10	Establishment of obligations for operators to take the necessary prevention and remediation measures including liability for costs.	Shall be implemented within four years of the entry into force of this Agreement.
	Articles 12 and 13	Establishment of mechanisms for affected persons including environmental NGOs to request action by competent authorities in case of environmental damage including independent review.	Shall be implemented within four years of the entry into force of this Agreement.
Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy as amended by Decision No 2455/2001/EC	Article 3(1) to 3(7)	Identification of river basin districts and establishment of administrative arrangements for international rivers, lakes and coastal waters.	Shall be implemented within four years of the entry into force of this Agreement.
	Article 5	analysis of the characteristics of river basin districts	Shall be implemented within five years of the entry into force of this Agreement.
	Article 8	establishment of programs for monitoring water quality	(Related to ground water) shall be implemented within eight years of the entry into force of this Agreement. (Related to surface water) shall be implemented within six years of the entry into force of this Agreement.
	Articles 13 and 14	preparation of river basin management plans, consultations with the public and publication of these plans	Shall be implemented within ten years of the entry into force of this Agreement.
Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks	Articles 4 and 5	undertaking preliminary flood assessment	Shall be implemented within five years of the entry into force of this Agreement.
	Article 6	preparation of flood hazards maps and flood risks maps	Shall be implemented within seven years of the entry into force of this Agreement.
	Article 7	establishment of flood risk management plans	Shall be implemented within nine years of the entry into force of this Agreement.
Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment as amended by Directive 98/15/EC		assessment of the status of urban waste water collection and treatment	Shall be implemented within six years of the entry into force of this Agreement.
	Article 5 and Annex II	identification of sensitive areas and agglomerations	Shall be implemented within seven years of the entry into force of this Agreement.

Directive	Article	Task	Timetable
and Regulation (EC) No 1882/2003		Preparation of technical and investment programme for the urban waste water collection and treatment.	Shall be implemented within eight years of the entry into force of this Agreement.
Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption as amended by Regulation (EC) No 1882/2003		adoption of national legislation and designation of competent authority/ies;	Shall be implemented within four years of the entry into force of this Agreement.
	Articles 4 and 5	establishment of standards for drinking water	Shall be implemented within four years of the entry into force of this Agreement.
	Articles 6 and 7	establishment of a monitoring system	Shall be implemented within seven years of the entry into force of this Agreement.
	Article 13	establishment of a mechanism to provide information to consumers	Shall be implemented within seven years of the entry into force of this Agreement.
Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources as amended by Regulation (EC) No 1882/2003		adoption of national legislation and designation of competent authority/ies;	Shall be implemented within four years of the entry into force of this Agreement.
	Article 6	establishment of monitoring programs	(Related to ground water) shall be implemented within eight years of the entry into force of this Agreement. (Related to surface water) shall be implemented within five years of the entry into force of this Agreement.
	Article 3	identification of polluted waters or waters at risk and designation of nitrate vulnerable zones	(Related to ground water) shall be implemented within eight years of the entry into force of this Agreement. (Related to surface water) shall be implemented within five years of the entry into force of this Agreement.
	Articles 4 and 5	establishment of action plans and codes of good agricultural practices for nitrate vulnerable zones	Shall be implemented within seven years of the entry into force of this Agreement.
Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy		adoption of national legislation and designation of competent authority/ies;	Shall be implemented within three years of the entry into force of this Agreement.
	Articles 5 and 6	development of a marine strategy in cooperation with relevant EU MS (Articles 5 and 6) (in the case of cooperation with non-EU MS, the commitments of Georgia under the Article 6(2) will be aligned on those provided for by the Black Sea Convention);	Shall be implemented within eight years of the entry into force of this Agreement.
	Article 5 and Articles 8 to 10	initial assessment of marine waters, determination of good environmental status and establishment of environmental targets and indicators.	Shall be implemented within five years of the entry into force of this Agreement.

D. INSTITUTIONAL FRAMEWORK

The State water resources of Georgia include rivers, lakes, natural and artificial reservoirs, canals, ponds, underground water, glaciers, wetlands, etc.¹⁰ Management of water resources is spread among different national bodies, institutions of autonomous republics and municipalities. Figure 1 below provides list of key institutions/agencies involved in water resources management issues.

Figure 1: Institutional Framework



The **MENRP** is a key institution at national level dealing with freshwater resource management. State protection and management as well as state control and monitoring of water resources (surface and groundwater) are mostly carried out through the MENRP and its entities. The monitoring of surface and underground water (quantity and quality) is under the responsibility of the National Environmental Agency (NEA)¹¹. The following departments under NEA are responsible for monitoring of underground and surface water:

- a) Environmental Pollution Monitoring Department (with three laboratories in Tbilisi, Kutaisi and Batumi) is responsible for surface water quality;
- b) Department of Hydrometeorology monitors surface water quantity; and

¹⁰ The Law of Georgia on Water; 1997, Article 7.

¹¹ NEA is the Legal Entity of Public Law (LEPL) under the MENRP. The Agency consists of six structural units: Administrative Department, Department of Geological Hazards and Geological Environment Management, Department of the Coastline Protection, Department of Spatial Information, Department of Hydrometeorology and Department of Environment Pollution Monitoring. For more information on NEA see following webpage: <http://meteo.gov.ge/about-agency>.

- c) Department of Geological Hazards and Geological Environment Management is responsible for monitoring groundwater quality and quantity. It also issues licenses for groundwater abstraction.

The Water Management Service under MENRP receives annual reports of water use. It collects water use data in appropriate database.

Other water-related responsibilities are scattered among different state institutions. The **Ministry of Labour, Health and Social Affairs of Georgia (MLHSA)** is responsible for defining quality standards for drinking and recreational water¹².

The **Ministry of Agriculture of Georgia (MA)** is responsible for monitoring, supervision and state control over drinking water safety parameters and compliance with drinking water standards as well as state control over irrigation systems. The National Service for Food Safety, Veterinary and Plant Protection¹³ under the Ministry of Agriculture is the competent body for drinking water quality control.

Water supply and sanitation (WSS) is under the responsibility of the **Ministry of Regional Development and Infrastructure of Georgia (MRDI)**. The MRDI manages the 100% state-owned water service company, United Water Supply Company of Georgia (UWSCG).¹⁴ The UWSCG provides water and wastewater services throughout whole Georgia for urban settlements excluding Tbilisi, Mtskheta, Rustavi and Autonomous Republic of Adjara. The drinking water supplies of the biggest cities, such as Tbilisi, Rustavi and Mtskheta were privatized in 2007. Rustavi, Batumi and Mtskheta water companies were established; these companies are supplying Rustavi, Batumi and Mtskheta cities, respectively. List of other private companies supplying water and wastewater to other small settlements are presented in Annex 2. Georgian Water and Power (GWP)¹⁵ provides water and wastewater services to the population of Tbilisi City.

The **Ministry of Energy** of Georgia negotiates Memorandums of Understandings with hydropower developers on specific sites or a cascade of sites on rivers across Georgia.

The **Georgian National Energy and Water Supply Regulatory Commission (GNERC)** sets out water supply and consumption rules, establishes methodologies for setting up water use tariffs, sets water use tariffs, and approves rules on penalizing illegal water users, including those illegally discharging wastewaters in sanitation systems¹⁶. In addition, GNERC provides licenses to hydropower plants with generating capacity greater than 13 megawatt (MW).

Authorities of the autonomous republics¹⁷ are responsible for water protection and control of water use on their territories. **The local self-governance institutions** are responsible for the management of water resources of local importance¹⁸.

¹² Drinking water quality standards and rules for drinking water quality monitoring are set out in the "Technical Regulation on Drinking Water" approved by the #349/N Decree, 17.07.2007 of the MLHSA.

¹³ The GoG adopted the Law on Food Safety, Veterinary and Plant Protection in 2005. The National Service of Food Safety, Veterinary and Plant Protection were established after adoption of above law.

¹⁴ LLC "United Water Supply Company of Georgia" was founded on January 14, 2010. The company provides water and wastewater services throughout whole Georgia for urban settlements excluding Tbilisi, Mtskheta, Rustavi and Autonomous Republic of Adjara. Main activities of Water Company include: water abstraction, treatment and supply; design of water and sewer networks, construction, installation, maintenance and operation; and production and rehabilitation of constituent elements of water and sewer systems. Source: <http://water.gov.ge/eng/about-us/company>.

¹⁵ For more info refer to following webpage: <http://www.georgianwater.com>.

¹⁶ Source: <http://www.gnecr.org>.

¹⁷ There is two Autonomous Republic in the territory of Georgia: Adjara autonomous Republic and Abkhazia autonomous republic. Abkhazia autonomous republic is a disputed territory controlled by a separatist government on the east coast of the Black Sea Georgia. <http://en.wikipedia.org/wiki/Abkhazia>.

¹⁸ Source: The National Environmental Action Program of Georgia, NEAP 2012-2016.

CHAPTER 3: FRESH WATER RESOURCES DATA MANAGEMENT

A. WATER QUALITY AND HYDROLOGICAL MONITORING NETWORK

Reliable information on hydrological cycle, including the data on water quality and quantity, constitutes the basis for effective water resources management.

The NEA under the MENRP is responsible for regular monitoring of freshwater resources (surface and groundwater) as well as coastal sea waters. The agency receives and processes data from automated and regular hydrometeorology, gauging and pollution monitoring stations.

Some Facts on Water Monitoring Systems in Georgia

Hydrological monitoring has been practiced in Georgia for a long time. First episodic hydrological (quantity) observations are dated in 19th century about 160 years ago. The regular hydrological observations are carried out from 1905. In the 1960's, hydrological observation stations covered practically all major and medium size rivers of Georgia.

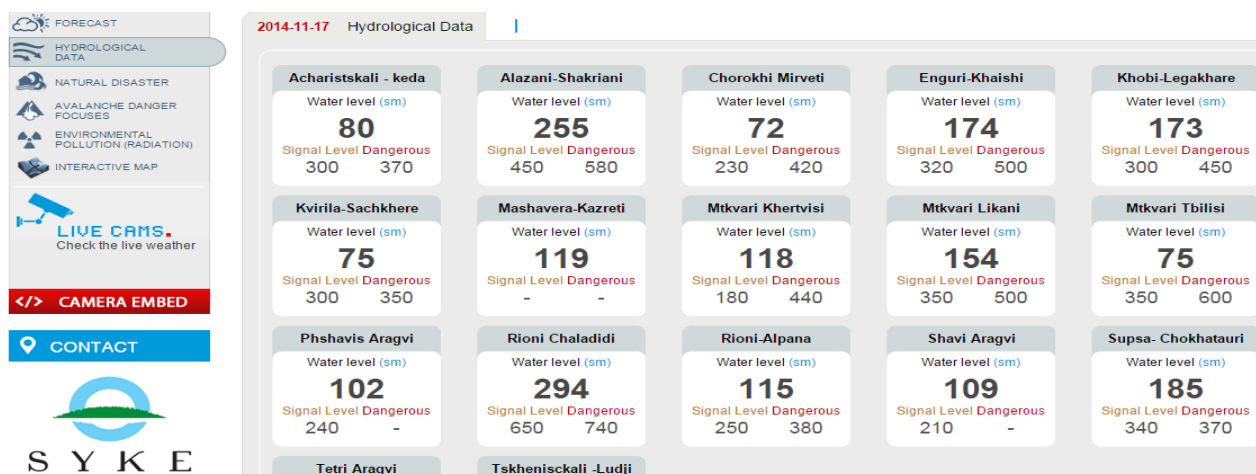
In the 1980's, coverage of observation sites and number of water quality monitoring parameters reached its maximum – about 170 posts were established and 56 parameters, including hydrological, physical, chemical and hydro-biological parameters, were monitored on about 72 rivers. This system was an integral part of the Soviet system of water monitoring.

Source: Seminar on Monitoring and Assessment of Transboundary Waters; UNECE, Geneva, 2008;

Meteorological and hydrological monitoring has been practiced in Georgia since early 1900s.

Before independence of Georgia (early 1990s) there were 150 stations for surface water quantity monitoring. After the collapse of the Soviet Union, a number of hydro-meteorological stations started gradually decreasing. Currently, only 21 hydrological gauges, 11 hydro-meteorological posts, 26 meteorological stations and 2 hydro-reservoir observation points and 3 marine stations operate (see Annex 3 Maps: The map of current network of hydro-meteorological observation in Georgia). The NEA is working actively with several donor institutions for improving the hydrological monitoring network in Georgia. As a result of this cooperation, it was possible to install automated hydrological and meteorological equipment at selected locations in 2010. Hence, the data on hydrological monitoring (water levels on critical points) became available on-line at the NEA's webpage (www.meteo.gov.ge); Information is updated daily (see Figure 3: on-line hydrological information on major Georgian rivers provided by the NEA).

Figure 2: Extracted picture from the NEA's webpage showing on-line hydrological information on major Georgian rivers



Monitoring of Surface Water Quality

The surface water and coastal sea water quality is also monitored by the NEA's Department of Environmental Pollution Monitoring.

By the end of the 1990's regular monitoring was taking place at more than 120 points. Currently this number is reduced to 41 gauges on 22 rivers and 4 lakes.¹⁹ Freshwater sampling is practiced once per month for 33 different parameters (mostly physical and chemical). However, different studies indicate that majority of Georgian rivers are highly loaded with nutrients. Therefore, sampling of these 33 parameters does not give full picture of the pollution levels in Georgia. These same studies recommend modernizing Georgian water quality standards according to recommendations of the EU Water Framework Directive.

Monitoring of Ground Water Resources

NEA has responsibility to carry out groundwater monitoring in Georgia, however, the monitoring network was abolished in 2004. By that time, the monitoring network covered some 2,000 observation sites. Plans are to re-establish the groundwater monitoring. Some efforts to upgrade underground water monitoring network has been initiated by NEA under financial assistance of foreign aid²⁰; However, upgrading underground water monitoring system is a lengthy process and requires vast amount of financial and human resources.

Despite significant effort to improve the water monitoring network in Georgia, available data in terms of water quality and quantity is still very poor and does not support proper GoG policy planning process.

Water Data Management and Reporting

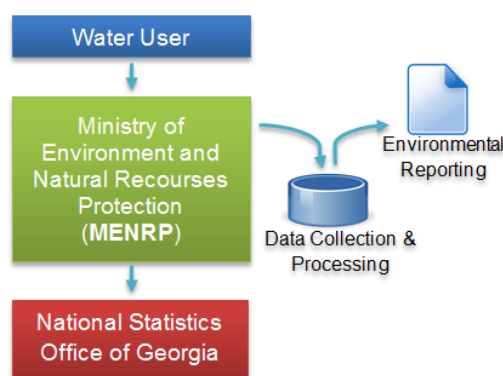
NEA owns and maintains water quality and quantity databases in MS Access format. The water quality monitoring data is further processed and used to produce monthly environmental pollution bulletins. These bulletins are developed by the NEA and available to the public through the internet (see following page: <http://meteo.gov.ge/index.php?l=2&pg=rd&ct=1&cm=ln!additionNEA>). However, the raw water monitoring data is not available for download from their website.

The Water Resources Management Service keeps regular records on water use. MENRP maintains the list of water users which are obliged to submit to the Ministry statistical (quantitative and qualitative) information on water use (abstraction, discharge). The water user fills the state accounting on water use form (See Annex 4: Form #4-I-01 approved by National Statistics Office of Georgia) and submits to the MENRP. Water use data is further processed by the Water Resources Management Service of the MENRP and transferred to the National Statistics Office of Georgia. It should be noted that there is no formal commitment between NEA and Water Resources Management Service of MENRP on data sharing.

¹⁹ Source: European Neighborhood and Partnership Instrument – Shared Environmental Information System; Georgia Country Report; European Environmental Agency; 2011 Tbilisi, Georgia;
http://www.zoinet.org/web/sites/default/files/publications/SEIS/enpi-seis-country-report_georgia_final.pdf.

²⁰ e.g.: NEA launched the Pilot Project on 'Introduction of an Information System for Data Transferring and Groundwater Monitoring Network in Kvareli and Lagodekhi Municipalities'; project aims to develop groundwater monitoring system in Kvareli and Lagodekhi municipalities; project is financed by Czech Development Agency
http://moe.gov.ge/index.php?sec_id=119&lang_id=ENG&project_id=105.

Figure 3: Water Data Flow in MENRP



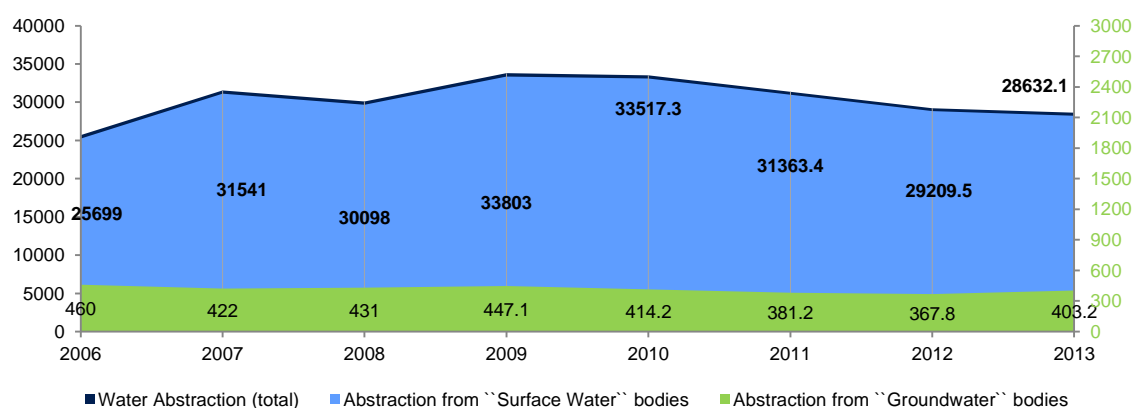
CHAPTER 4: WATER USE

This part of the report provides background information on water use and water abstractions, particularly for potable water supplies, agriculture, irrigation, industry and power plants.

MENRP receives annual reports of water use from registered water users. For example, in 2008 MENRP received records from 800²¹ registered water users²². It should be noted, that neither by the MENRP nor by the users this data is controlled for accuracy. Typically estimations rather than measurements²³ are used. This mainly happens due to the outdated methods and devices used for measurement of water abstraction.

The Figures 4&5 below show the water abstraction from surface and ground water bodies for the period of 2006-2013 and water use for domestic, agricultural, industrial and irrigation purposes and water losses for the same timeframe.

Figure 4: Water Abstraction from Natural Sources of Water (million m³)



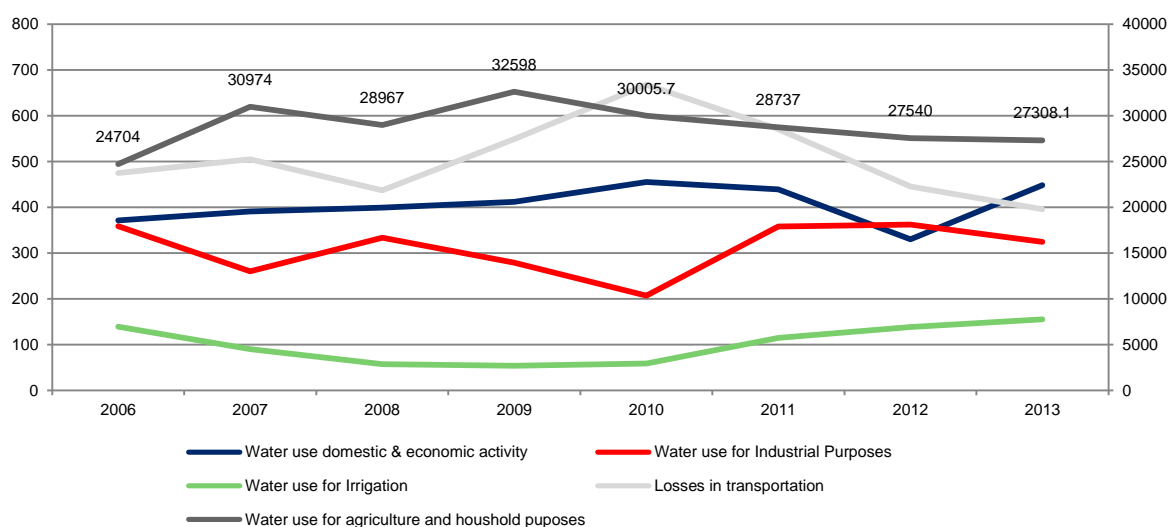
Source: National Office of Statistics of Georgia Statistical Publications on Natural Resources and Environment Protection of Georgia from 2004 up to 2013

²¹ See Annex 5 Number of bodies reporting water use by field of entrepreneurial activities.

²² Ministry of Environment and Natural Resources Annual Report 2007 and 2006.

²³ Source of this statement is the first Environmental Performance Review (EPR) report, prepared by UNECE 2003. However since then situation on water use data remains the same.

Figure 5: Water Use Domestic & Economic Activity/Irrigation/Industrial/Agriculture and Other Purposes & Losses in Transportation (million m³)



Source: National Statistics Office of Georgia Statistical Publications on Natural Resources and Environment Protection of Georgia from 2004 up to 2013

Fees for abstraction of surface water resources

Fees for the abstraction of surface water differ depending on the source and region (see table 2 below). Abstraction of underground and surface water for communal and rural conduits is charged at 0.01 Tetri per m³. Hence, price for water abstraction is very low in Georgia.

Table 2: Fees for Use of Water Resources (Water Abstraction Fees)²⁴

Water objects group	Amount of charges in Gel per cubic meter
I Group (Rivers of Caspian Sea's basin, lakes and other reservoirs)	0.01
II Group (Rivers of Black Sea's basin, lakes and other reservoirs)	0.005
III Group (Black Sea water)	0.003
Water abstraction for irrigation systems and Thermal Power Plants (TPP)	1 percent of above fees
Water abstraction for Hydro Power Plants (HPPs)	0.01 percent of above fees

B. POTABLE WATER SUPPLY

The main source of drinking water in Georgia is groundwater (around 60%). The rest is abstracted from surface water. World Health Organization estimates, that each person needs 20-50 liters of safe freshwater a day to ensure basic needs for drinking, food preparation and personal hygiene²⁵.

The potable water supply activity in Georgia requires a license. Respectively sector is represented by 15 companies²⁶ licensed to provide potable water supply activity. The activity area of aforementioned companies covers²⁷ whole Georgia, except the areas where local communities drilled their own wells for water supply purposes. Also, in some areas, water supply services are provided by non-commercial legal entities established by the local government.

²⁴ For the use of natural resources fees payers are persons/entities, which are subject of licensing under the legislation. Since amendment enter in force, made to the Georgian Law (14/12/2007) on "Licenses and permits" requirement for permits on water abstraction and discharge of water were abolished for the persons/entities which business activity doesn't requires license.

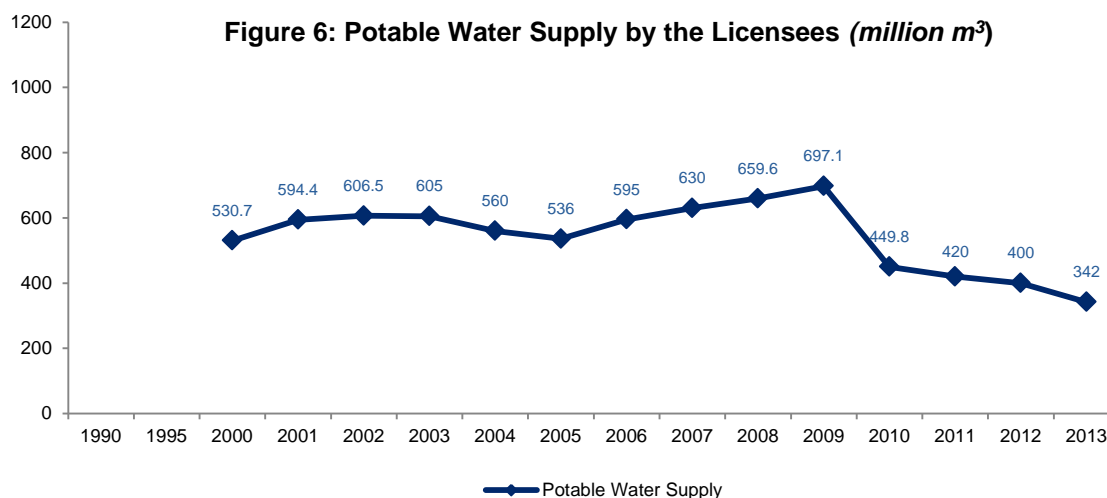
²⁵ IFAD Water Facts and Figures (<http://www.ifad.org/english/water/key.htm>).

²⁶ See Annex 2 List of Potable Water Supply licensed Companies.

²⁷ See Annex 3 The map illustrating the distribution of water supply licensed companies across Georgia.

The potable water supply reached its peak in 2009, for the period 2000- 2013²⁸. The supplied water amounted to 530.7 million m³ in 2000 and amount grew to 606.5 million m³ by 2002.

Increase of water supply started from year 2005. Increase continued almost with the same slope for next 4 years, resulting in supply of approximately 700 million m³ by 2009.



Source: GNERC Annual Report 2013

The depreciated water supply infrastructure and poor metering system resulted in significant losses in water supply network until 2009. Since 1997 to 2010²⁹ WSS sector has received approximately \$285 million of donor financing. Technical assistance from donors, for the aim of rehabilitation and modernization of infrastructure, is still active. Construction of new facilities, investing in metering of consumers can be seen as a main determinant of rapid decline in water demand that has been observed since 2009. Next year, the supply fell to 450 million m³. Even more, in 2013, drinking water delivered to customers reported 342 million m³, which is 14.5% less comparing to the indicators of year 2012.

GNERC is authorized to establish water supply tariff per customer for those customers (population) who do not have individual metering devices. To minimize water wastage, metering is encouraged through design of the tariffs,³⁰ so that monthly bills for un-metered residential customers are based on number of household members.

The potable water supply licensed companies reported up to 832,111³¹ customers for 2013, out of which only 256,144 customers are metered as of January 2014.

²⁸ GNERC Annual Report 2013 Annex 17.

²⁹ Asian Development Bank (ADB) Technical Assistance Consultant's Report Georgia: Developing an Urban Water Supply and Sanitation Sector Strategy and Regulatory Framework for Georgia Final Report Output 1 – Sector Development Plan 1.1 Strategic Context- paragraph 12.

³⁰ See Annex 6 Tariffs approved by the GNERC.

³¹ GNERC Annual Report 2013 Par. Potable Water supply p.26.

³¹ GNERC Annual Report 2013 Annex 16.

³¹ Table 4 Marginal Tariffs approved by the GNERC.

Figure 7: Served Populations under Activity Area of Water Supply Company

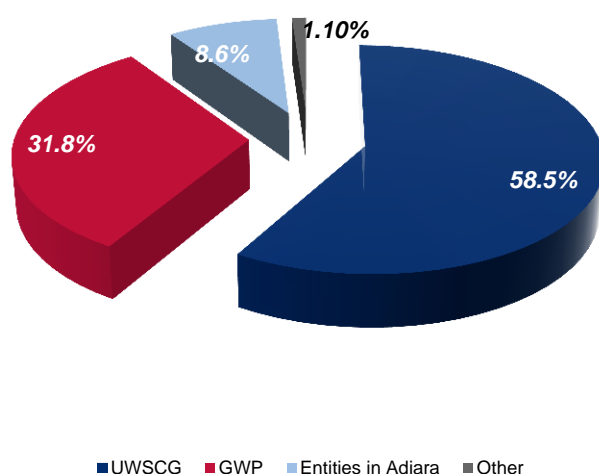
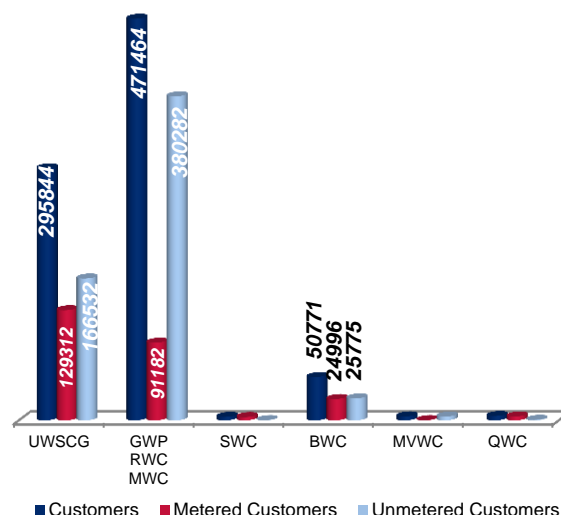


Figure 8: Metered and Unmetered Customers



Source: GNERC Annual Report 2011-2013

Figure 7 indicates that 31.8% of total population is supplied by the privately owned companies: GWP, LTD Rustavi Water Company (RWC) and LTD Mtskheta Water Company (MWC). 58.5% of the Georgian population is served by the State-operated UWSCG³². From Figure 8, it is clear that a prevailing amount of customers still remains unmetered.

Metering is an essential element of effective water management. In the absence of meters, customers are billed at a flat rate, meaning that they pay the same amount regardless of how much water they use. Metering data can also be used to manage demand, plan operational and maintenance activities and effectively use available water resources through non-price mechanisms³³. Despite the known benefits of water metering, there are barriers. For example, meter installation requires a large up-front investment, especially when existing infrastructure must be retrofitted to accommodate the new device.

Considering above provided paragraphs, water supply companies should be affected by the difficulties in effective water management, planning operational and maintenance activities, mobilize sources to finance metering and to manage demand.

However, it is a fact that tariff methodology is in place and because WSS systems are impacted by the aging and deferred of maintenance, the sector receives assistance from GoG and international donors. It seems that cost recovery and investments in WSS infrastructure has been insufficient and sector continues to be plagued by poor performance, at least caused by the fact, that 67% of surface water pollutants consists of non-treated municipal wastewater³⁴ and ability of most of the water supply licensed companies to invest in new infrastructure or to self-finance rehabilitation works, is low and requires external sources of finance.

³² See Annex 7 for List of Major UWSCG Non-Domestic Clients.

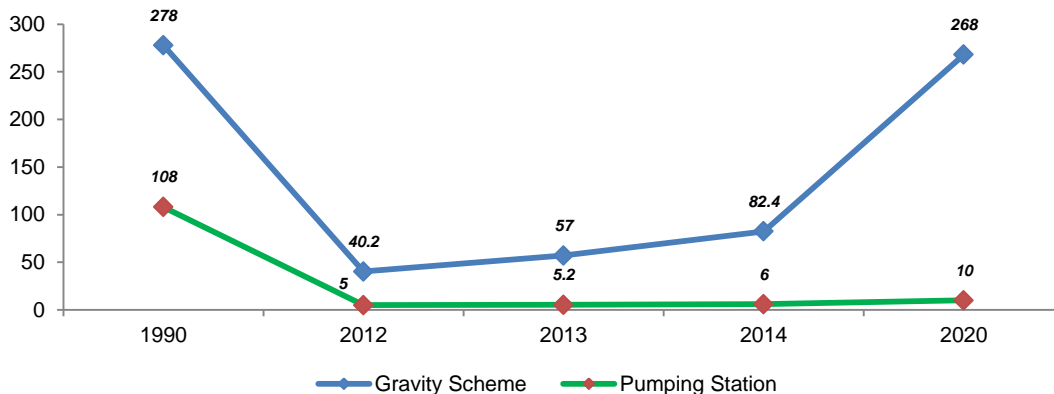
³³ Pacific Institute Metering in California (<http://pacinst.org/wp-content/uploads/sites/21/2014/09/pacinst-metering-in-california.pdf>).

³⁴ Environment Protection Second National Action Plan of Georgia par.2.1 Existing Situation.

C. WATER USE FOR IRRIGATION

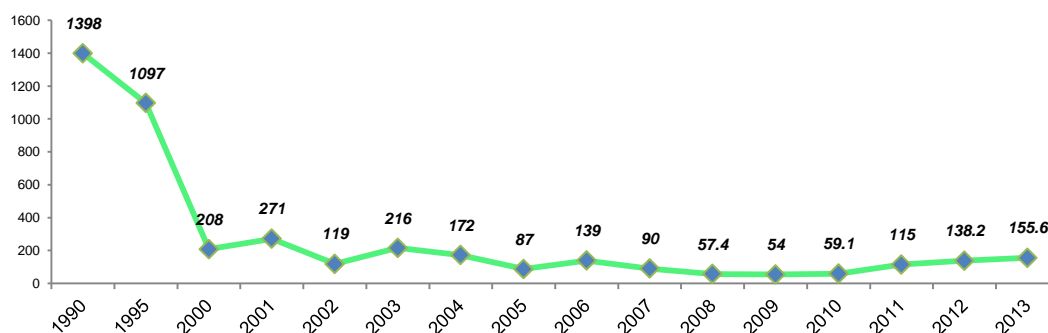
The irrigation potential in Georgia is estimated at 725,000 ha. “In the majority part of the west, rainfall is significant and drainage is required to prevent water-logging, while in the south and east - irrigation is required. Major investments were made in the irrigation sector during the Soviet period, resulting in a total area of about 500,000 ha equipped for irrigation at the beginning of the 1980s, and in 1990 around 386,000 ha³⁵, mainly located in the more arid eastern part of the country”.

Figure 9: Area Actually Irrigated (thousand ha)



Source: Department of Melioration Policy, MA

Figure 10: Water Use for Irrigation (million m³)



Source: National Statistics Office of Georgia. Statistical Publications on 'Natural Resources and Environment Protection of Georgia' from 2004 up to 2013

Figure 9. indicates, that irrigated area has declined significantly during 1990s since independence of Georgia (386,000 ha in 1988 was made up of 278,000 ha gravity-fed and 108 ha pumped irrigation). The decline was contributed by the war, theft, lack of finances, transition to market economy, land reform. Because of sharp decrease in irrigation land area, the abstraction of water for irrigation purposes has declined (as it is shown on Figure 10.)

Recently, starting from 2009, there has been an increase in area actually irrigated³⁶ comparing to previous years. Significant Increase (to 278,000 ha)³⁷ of actually irrigated area is planned by 2020.

³⁵ FAO Assessment of the Agriculture and Rural Development Sectors in the Eastern Partnership Countries.

³⁶ Actually Irrigated Area is an area irrigated in a given year.

³⁷ Based on assumption of Ministry of Agriculture Melioration Policy Department.

Among other factors, which affect increase in area actually irrigated are state programs³⁸ implemented through state budget allocations³⁹ and donor assistance. The main purposes of implementing of the aforementioned programs are effective use of water resources and development of irrigation systems, to increase irrigation and drainage area through the rehabilitation of the available systems and purchase of relevant equipment and machinery for operation.

Respectively, assessment of water resources, developing appropriate tools for water resources allocation and system planning, together with existence of appropriate permitting system to reserve rights for water abstraction and discharge, plays significant role for ensuring required amount of irrigation water. If water is in short supply during some part of the irrigation season, crop production will suffer, returns will decline and investment may turn unreasonable.

The institutional arrangement for management of irrigation infrastructure was changed several times. Melioration infrastructure is now directly managed by United Amelioration Systems Company of Georgia (UASCG)⁴⁰. UASCG has been established under the order of the LEPL Entity Management Agency and 100% of share management authority transferred⁴¹ to the MA.

The UASCG infrastructure includes 128 irrigation systems, 31 dam head works and 22 reservoirs with a total reservoir capacity of 1 km³, of which 782 million m³ is active⁴². The projected operational area covers an area of 278 thousand ha of irrigation, and drainage systems covering over 100 thousand ha of land⁴³.

The current policy regarding development of amelioration infrastructure is for the GoG to finance rehabilitation of irrigation and drainage infrastructure while the UASCG Administrative & General costs to manage, and Operational and Maintenance costs incurred on infrastructure units are to be paid by irrigation and drainage service users through a service charges⁴⁴ adopted by the GNERC in 2010.

The design of exiting tariffs allows differentiation of irrigation and drainage service charges by the regions⁴⁵ and use of irrigation area as a charging basis meaning that customers growing different crops pay the same amount regardless of how much water they use. However challenges that UASCG faces is poor recovery of investments and recovery of costs, which mainly deals with non-existence of appropriate tariff methodology for services provided in parallel with the need to identify competent authority which might be authorized to develop and approve such methodology. The difficulties also exist on identification of land owners under irrigation area non identifiable through Public Registry spatial database, because not all the land is registered according with current format required for land registration.

³⁸ Ministry of Agriculture "Agriculture Development Program" and mainly its sub-component "Modernization of Melioration Systems" Georgia Law on State Budget State Budget allocations 2012/2013/2014 Mof.ge.

³⁹ Comparative to the state budget total allocations from 2008 until 2012 for programs such as "Rehabilitation of Melioration Systems" and "Activities to Support the Operation of Melioration Systems", the state budget allocation for year 2014 related to "Modernization of Melioration Systems 71 million GEL" increased more than three times. Source: Georgia Law on State Budget 2014 - Chapter VI Georgia State Budget Allocation Mof.ge.

⁴⁰ See Annex 3 map showing scheme of melioration infrastructure allocation.

⁴¹ President of Georgia Decree # 25/04/01.

⁴² Letter of the Ministry of Agriculture #4374 (07/02/14) in response to the Green Alternative application (<http://www.opendata.ge/ka/preview/27621>).

⁴³ Ministry of Agriculture "Two Year Work Summery" for Information Agency "Commersant" (<http://commersant.ge/?menuid=11&id=16440&lang=1>).

⁴⁴ For main services (Irrigation & Drainage) provided by the companies GNERC at 1 February of 2011 by resolution #2.

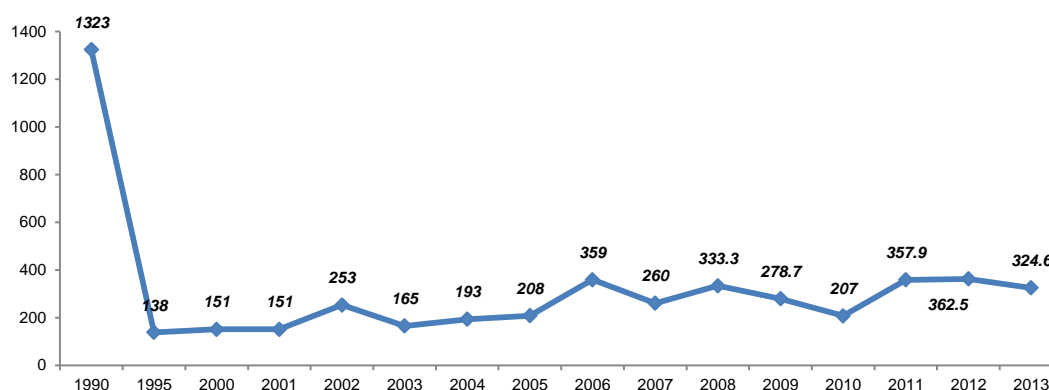
⁴⁵ For main services (Irrigation & Drainage) provided by the companies GNERC at 1 February of 2011 by resolution #2 approved irrigation and drainage service fee until development of appropriate tariff methodology adopted for companies that are for now merged and UASCG represents successor of merged companies.

D. INDUSTRIAL WATER USE

Industries⁴⁶ using large amounts of water in Georgia, produce commodities such as food, alcoholic and non-alcoholic beverages, paper, chemicals, metal products or primary metals, and carry out mining activity.

The commodities produced by the food industry together with metallurgy and chemical sectors play significant role in Georgian economy, due to its production value and share in exported commodities, specifically spirituous beverages, wine, ferro-alloys, gold, copper ores and concentrates, cyanides, cyanide oxides and complex cyanides, cement, articles of plaster, cement or similar materials, fertilizers and pharmaceuticals.

Figure 11: Water Use for Industrial Purposes on Rural Areas (million m³)



Source: National Statistics Office of Georgia Statistical Publications on 'Natural Resources and Environment Protection of Georgia' from 2004 up to 2013

Products of the food industry include tea and table/dessert wines. Brandy and champagne production is also well developed. Other food-industry activities include dairy farming and canning. In most of cases, production is centered in the major cities. Water for industrial use may be delivered from a centralized network (WSS, Irrigation Systems etc.) or be self-supplied.

For 2013, amount of annual industrial water use in urban areas following numbers from entry "Industrial water use" of statistical tables reported 324.6 million m³. The above mentioned Industrial water use was about 1.13% percent of total abstractions and about 1.18% percent of total amount of consumptive and non-consumptive use of water. For the aforementioned period Industrial water use was 10.5% less than during 2012 and 75% less than during 1990.

E. WATER USE FOR ELECTRICITY GENERATION

In Georgia, electricity generation is dominated by hydro power, which accounted to 82% of total generation in 2013. The Enguri HPP (with installed capacity of 1,300 MW) is the biggest electricity generation asset in Georgia. Currently Georgia hydropower generation consist up to 19 licensed and 36 small (deregulated) HPPs. The total HPPs all together amount up to 2,786 MW of designed capacity.

HPPs have been developed with limited reservoir storage capacity. Approximately 10% of annual generation can be placed in storage. Limited storage capacity and significant spring and summer peaks in river flows result in an uneven annual generation profile and significant water spill in wet years. In 2009, the spill of water was estimated at 1,44-1,5 terawatt hour (TWh) or approximately 20% of annual hydro generation⁴⁷.

⁴⁶ See Annex 8 Structure of Manufacturing Sector.

⁴⁷ ECON Report 2010-007, The Electricity Sector in Georgia-an Overview.

Figures 12&13 indicate that Georgia is marked by a seasonal supply of electricity generated on HPPs, a surplus in the summer and deficit in other seasons as many rivers suffer from insufficient water flow. Georgia is a net exporter of electricity in the summer months and a net importer of electricity during other seasons. The gap is bridged by TPP and imports.

Figure 12: Annual Generation Profile 2010

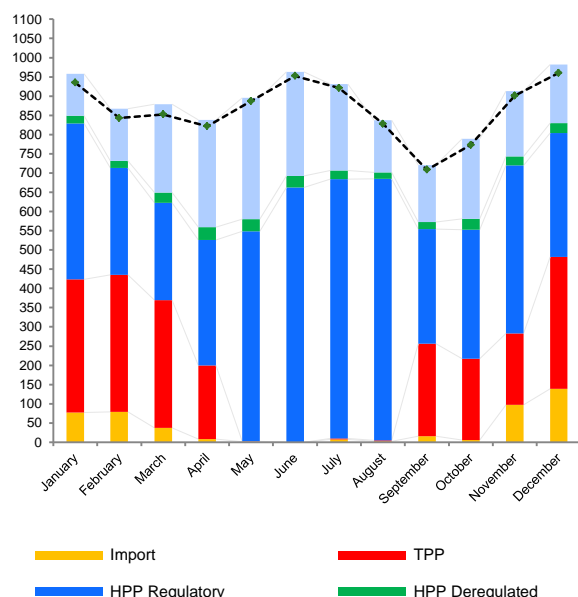
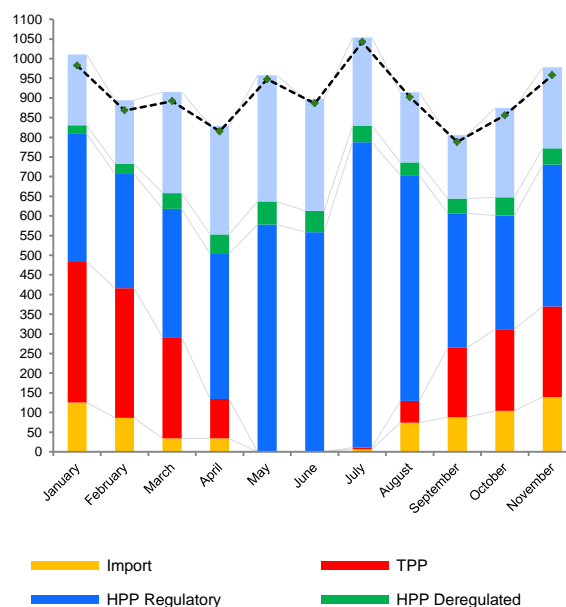


Figure 13: Annual Generation Profile 2014



ses)

ESCO Energy Balances 2006-2014 Import Export Statistics 2006-2014

Georgia has three TPPs⁴⁸ to help bridge the gaps in electricity generation needs and in autumn 2015, a new Combined Cycle Gas Turbine (CCGT) will commence commercial operation with installed capacity of 230 MW. In addition, to ensure country energy independence and security, also due to favorable gas transit agreements and a low-cost gas supply agreement with Azerbaijan, the MoE together with the Joint Stock Company (JSC) Georgian Energy Development Fund is working on the development of another combined cycle power plant with the capacity of 500MW. Also the construction of the coal-fired power plant with installed capacity of 100-150 MW which is intended to operate on local coal resources will start by the end of 2016 and the completion date is 2019.⁴⁹

Assuming no constraints in development of new power plants and in transmission capacity to neighboring countries electricity markets, Georgia could develop significant share of generating capacity consisting of HPPs with 1,630 MW installed capacity and TPPs with approximately 880 MW installed capacity to the end of 2020⁵⁰. It will have substantial impact on energy security of country, HPPs with storage capacity together with TPPs are important in meeting peak power demands since they can quickly adjust to changes in peak loads.

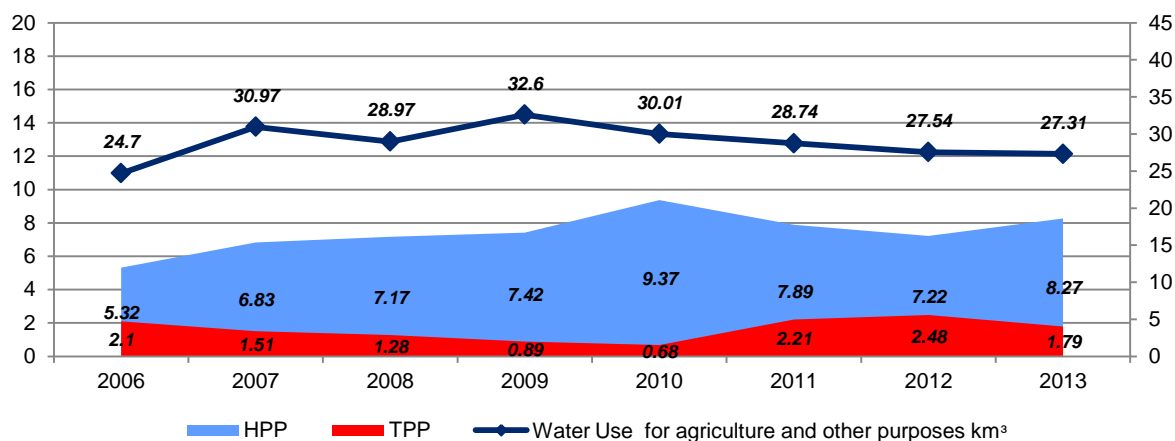
⁴⁸ The 300 MW Georgia International Energy Corporation (GIEC) owned Tbiliresi plant (built in the early 1970s. The 300 MW Mtkvari Energy Owned plant (spun out of the Tbiliresi asset base and now owned by the Russian company Inter Rao). The 110 MW Open Cycle Gas Turbine (OCGT) owned by the private company G-Power. Thermal efficiency of the plants is estimated to be 29-36%.

⁴⁹ Office of the State Minister of Georgia on European and Euro-Atlantic Integration Georgia's Progress Report on Implementation of the European Neighborhood Policy Action Plan and the EaP Roadmaps 2014 (October) pg. 197 Gas and Oil Sector (Source: <http://www.eu-nato.gov.ge/sites/default/files/ENP%20AP%202014%20Georgia%20-%20Final%2020.10.2014.pdf>).

⁵⁰ See Annex 9 listing proposed electricity generation hydropower plants up to 2020.

Before the increase in generation of electricity which started from 2010, overall electricity generation in Georgia was relatively unchanged in the period from 2002 to 2009 with average annual generation standing at around 8 TWh⁵¹.

Figure 14: Electricity Production Profile from 2006 up to 2013 and Agriculture-Economic Activity and other Water Use



Source: National Statistics Office of Georgia Statistical Publications on `Natural Resources and Environment Protection of Georgia` from 2006 up to 2013 / GNERC Annual Reports 2006 2013 / ESCO Energy Balances 2006 - 2013

From Figure 14, it is clear that significant variation in the water use per unit of electricity produced exists. Assuming that the historical reported level of used water for "Agricultural-Economic Activity and Other Water Use" the major volume was utilized by HPPs for electricity production. Thus, the highest number of water-use per produced kilowatt-hour (kWh), has been shown in 2009 (4400 liters per generated kWh) which is approximately 2.7 times higher comparing to the numbers reported for hydropower generation in United States (estimate -1995y. about 440 gallons \approx 1,665 liter)⁵². Also the trend observed in Figure 14 shows that variation on water use per produced kWh is uneven. For instance in 2007 reported use of 30.1km³ of water for generation of 8.34 TWh versus 2010 when the same volume of the water used to produce 10.1 TWh of energy.

F. WATER USE CONFLICT CASE STUDIES

The term 'water use conflict' refers to a real or perceived set of incompatible interests and goals among two or more parties. Conflict is a natural part of public life and the process of constructively resolving competing interests through negotiation. Understanding of particular water use conflict genesis and careful deliberation can contribute to better outcomes for all involved stakeholders.

⁵¹ GNERC Annual Reports (2000-2013).

⁵² Pacific Institute Water for Energy: Future Water Needs for Electricity in the Intermountain West. pg. 22 Box 2 Does Hydropower Use and Consume Water? (Source: http://www.pacinst.org/wp-content/uploads/2013/02/water_for_energy3.pdf).

Figure 15: Example of Water Use by Various Sectors



Case Study 1: Water allocation between HPPs and irrigation channels

Up to 10 small HPPs using water from irrigation channels can be found in different regions of Georgia. All of them are located in the upstream areas. Because of their upstream location these small HPPs get the most from the water available during the year, while the agricultural lands in downstream areas are left with less water. The existing pattern of water use is not efficient and creates conflict of interests between upstream and downstream water-user groups.

To generate electricity, these small HPPs take water from a main irrigation channel and release it downstream to the primary channels, directly to other rivers or irrigation plots⁵³. Therefore, water taken from the main channel is not returned back to the main system. At the same time agricultural lands downstream are fed by the main irrigation channel, which is left with less water.

Conflicts arise in May-August, which is high season for the irrigation. Typically this is the period when electricity price offered by the Electricity System Commercial Operator (ESCO) is low and is not attractive for HPP operators. However, in majority of cases, HPPs are still interested in generation electricity in summer-time (some with the opportunity to sell into the national electricity markets) and use water at full capacity ignoring the needs of the downstream areas. The situation becomes more aggravated during drought and low water periods, when downstream water-users might experience severe water-shortage as they get insufficient water to irrigate their agricultural plots.

Similarly, HPPs might face problems with water delivery from the main irrigation channel during the winter period, when the tariff for electricity purchase is the highest in the market. Due to the unfavorable winter weather conditions, irrigation system might stop or reduce water supply to the small HPPs disregarding needs of HPP operators.

In both of these cases small HPPs and irrigation systems should agree on the rational use of water and establish harmonized operational regimes.

⁵³ The primary channel feeds off the main channel. It either delivers water to other channels or directly to the irrigation plots.

Case Study 2. Water allocation between several irrigation systems

In Georgia there are several cases when multiple irrigation canals located on the same river compete among each other for water use. Those irrigation systems do not ensure efficient and equitable delivery of water to upstream and downstream water-users. In majority of cases it occurs due to the poor planning and inadequate consideration of spatial, temporal and seasonal features of the river and irrigation systems.

The Tedzami River is one of such examples, where nine irrigation canals are operational. The river originates in the Trialeti range. It crosses Kaspi Municipality (Kartli region) and joins the Mtkvari River near the village Metekhi. The Tedzami River is 51 km long. The watershed area is 394 km². The mean annual flow is 2.32 m³/s. The river has high flows in spring and very limited water flow in autumn, summer and winter periods. In the summer, the river flow goes down to 0.21 m³/s.

Nine canals (Sioni, Doesi, Kharagaji, Sasireti-Zemo Khandaki, Tedzami-Pashiani, Metekhi-Pashiani, Chocheti, Niabi and Tsabla) on the Tedzami River were designed to supply 2,558 ha agricultural land within Kaspi Municipality. 10 mln m³ of water is needed to irrigate the mentioned area during vegetation period.

According to the existing set-up, two irrigation (Sioni and Tsabla) canals are placed upstream and the rest is located downstream. Water flow in the lower seven canals usually is insufficient to meet downstream farmers' needs for irrigation. Moreover, at the lower reaches, the river could be completely dried-out during the droughts.

The existing problem has several root causes:

1. Improper assessment of water resources available in the Tedzami River Watershed;
2. Inadequate planning and designing of the irrigation canals;
3. Old and downgraded irrigation system, with high water losses within the system.

Due to the inadequate allocation of water between different irrigation channels, MA decided to build a reservoir of 12 million m³ in volume⁵⁴. The reservoir will be regulated seasonally and will bear multiple functions. It is designed to fully meet needs of the significant part of Kaspi Municipality demand on irrigation water supply, to prevent floods and flashfloods in spring and to supply villages downstream the Tedzami River with potable water. At the same time, irrigation canals will be rehabilitated to minimize losses within the irrigation canals⁵⁵.

Case Study 3. Conflict between irrigation and potable water

The Iori River is one of the major trans-boundary rivers in Kura-Aras river basin. It originates in the Great Caucasus Mountains in Georgia and flows into Mingachevir Reservoir in Azerbaijan. The river basin area in Georgia is 4,040 km², the length is 320 km. Water resources of surface waters amount to 11.6 m³/year (average figure for the period from 1963 to 1992). The resources of ground waters amount to 155,520,000 m³/year. There are high waters in spring and low waters in winter. Floods are common in summer and autumn.

The Iori River is used for irrigation, hydropower generation and drinking water supply. There are three reservoirs fed by the River: Sioni (325 million m³), Tbilisi (308 million m³) and Dalimta (180 million m³). Two of them, Sioni and Tbilisi, are multi-functioning and used for different purposes.

Conflict arises between allocation of water resources from Tbilisi reservoir between drinking water supply and irrigation system. Existing water resources do not satisfy both needs equally. Several implications are leading to the current set-up of the water-use.

Tbilisi reservoir receives water from two sources: the Iori and the Aragvi Rivers. Annual inflow is approximately 85 mln m³/year, at the same time annual use of water from the Tbilisi reservoir also equals 85 mln m³/year, out of which 83% belongs to domestic consumption.

⁵⁴ Tedzami Reservoir EIA http://moe.gov.ge/files/PDF%20%20qartuli/Daskvnebi%20Nebartvebi/News/2014/03%20MARTI/_6.pdf.

⁵⁵ Climate Change and Adaptation for Kaspi Municipality; <http://nala.ge/uploads/kaspi.pdf>.

The remaining water goes to Lower Samgori irrigation channel and supplies downstream areas in Gardabani⁵⁶. (These amounts are rough estimates given by the Georgian water experts. The data cited do not reflect losses from evaporation and seepage, neither have they provided monthly or more detailed water use patterns and water inflow.) Problems with water availability are of seasonal characteristic, mostly felt in dry periods in summer.

During droughts, Tbilisi Reservoir is an unreliable water source with limited capacities. Available water primarily is used to meet needs of Tbilisi population for drinking water supply. Use of the irrigation water is compromised and downstream farmers experience water shortage during the dry seasons.

Figure 16: Annual Average Water Inflows and outflows from Tbilisi Reservoir



Inefficient allocation of water between different users in case of Tbilisi Reservoir is also caused by flaws in the design of pumping stations. Water is not effectively used, as the location of pumping stations for drinking water allows using only a part of the usable storage (64 million m³).

In the future, conflict between irrigation and drinking water is expected to worsen. There is a trend of the intensification of agricultural activities in downstream areas. At the same time government plans to rehabilitate old and out of dated irrigation canals, which will lead to increased demand on irrigation water.

Case Study 4: Khrami River

Khrami, a river in the eastern Georgia, is a right tributary to the Mtkvari River. It rises on the slopes of Trialeti Range and drains an area of 8,340 km². It is 201 km long. The annual discharge rates are from 7.02 m³/s to 51.7 m³/s, depending on location. High waters are only common in spring, while low waters are found in the river for the rest of the year. Main tributaries are Debeda and Mashavera rivers.⁵⁷ The Khrami River feeds Tsalka Reservoir.

Khrami is used for multiple purposes. Tsalka Reservoir of 313 million m³ was designed in 1949 on the Khrami River for hydropower generation and irrigation purposes. There are 3 hydropower plants (Khrami 1, Khrami 2 and Mashavera (Dmanisi) HPPs) built in the upper reach of the river. In downstream areas, the river is used for irrigation, e.g. Khrami channel is 28.4 km long and potentially can be used for up to 10,000 ha arable lands. Currently, irrigation systems in the river basin do not use their full capacity due to the high water losses in the system and outdated irrigation infrastructure. The Khrami River is also used for domestic use in Bolnisi, Dmanisi, Marneuli and Tsalka districts. Two cities, Gardabani and Rustavi, also partly use Khrami water for drinking purposes⁵⁸ (Marneuli Municipality Development Plan, 2013).

⁵⁶ Lower Samgori channel- irrigating up to 29.2 thousand ha in Gardabani and part of Tbilisi arable lands.

⁵⁷ Integrated River Basin Planning – Khrami/Debeda Watershed (2001, USAID/Development Alternatives Incorporated) <http://www.rmpportal.net/nriclib/2000-2999/2529.pdf>.

⁵⁸ Marneuli Municipality Development Plan (Care, Sida 2013), <http://www.care-caucasus.org.ge/uploads/reports/marneul1.pdf>.

Existing water resources in Khrami are not enough to be equally allocated between different user-groups. Irrigation is often compromised, particularly in dry seasons. Priority is given to drinking water and HPPs located upstream. Therefore, according to existing scheme downstream areas get less water which is not enough to irrigate agricultural lands there.

CHAPTER 5: CONCLUSION AND NEXT STEPS

Although some improvements in the water supply and sanitation sectors are visible, shortcomings still exist. Current water management system lacks clear vision, consistency and result orientation. No national strategy on integrated water resource management has been developed. The second National Environmental Action Plan (covering the period of 2012–2016) has only provided a broad framework of actions for the protection and management of water resources. Discussion of the concept of river basing management is only just beginning.

The legal framework of the water sector requires fundamental revision. Georgia's water-related legislation is inconsistent and fragmented through a wide range of legal acts, and the Law on Water is weakly linked to all the other laws. Adoption of newly prepared draft Water Law remains pending due to lack of consensus between GoG ministries.

Determining the amount of water needed in the future is one of core issues of the water planning process. Projected water use can in general to be expected come from agriculture sector (irrigation and drainage), domestic water supply and sanitation, industry and energy generation in nearest future.

Moreover, due to insufficient monitoring of surface and ground waters, data on quality and quantity of country's surface and ground waters is limited. Before independence, there were 150 stations for surface water quantity monitoring, but now only 30 hydrological stations are still in operation, of which 14 have automated equipment. The water quality and quality monitoring system requires upgrade. About 78% of the urban population and 4% of rural population is connected to sewage network. Connection to a sewage network provides the opportunity of minimizing pollution of water and land resources through central treatment of wastewater. However, waste water treatment is a major problem in Georgia. Currently, only 3 waste water treatment plants are in operation (among them one recently starts operation). However, even though most water bodies are of acceptable quality in Georgia, still water quality is poor in some lakes, rivers and coastal waters, mainly due to untreated urban and industrial sewage discharges.

Sustainable water resource management requires a strategic approach including: (a) promotion of best available technologies; (b) sufficient financing and regulating system; (c) due consideration of the human factor and adequate training; (d) adequate data monitoring network and reporting systems; (e) efficient inter-sectorial cooperation; and (f) inclusive public-private dialogue in the decision-making process.

Proposed G4G interventions

Many processes in water management are participative and require effective communication between parties. The G4G will draw upon active participation of key stakeholders in the private and nongovernmental sectors to ensure inclusive participation and support for water management planning in the long term. Moreover, G4G will provide technical assistance and training to various stakeholders in order to support the development of a national water policy and sustainably allocate fresh-water resources across multiple competing interests. Additionally, G4G will facilitate development of a Water Sector 'Green Paper' with the aim of assessing the consistency of proposed water legislation with AA targets and GoG sectorial policies along with proposed recommendations (gap analysis). Successful delivery of the Water Sector Green Paper will create the basis for public private dialogue and support sound GoG decision-making process. It is also expected that this Green Paper could be used as a tool by GoG for identification of water stakeholder's needs and expectations (e.g. water users) as well as for reaching a consensus between stakeholders before drafting the water policy document. The Green Paper discussions will lead towards the next stage of the process – the production of a White Paper (a full water sector policy document).

ANNEXES

ANNEX 1 INTERNATIONAL ASSISTANCE IN WATER SECTOR

Year	Project	Donor	Budget	Objective
2010-2014	Integrated Natural Resources Management in Watersheds of Georgia	USAID	6,500,000 USD	To improve the current and future lives of people in Georgia by utilizing and managing natural resources more sustainably, including water, soil, vegetation, and the ecosystem that encompass them.
2011-2013	Municipal Infrastructure Development Project	USAID	17,700,000 USD	This project aims to develop and rehabilitate municipal infrastructure in certain municipalities affected by the 2008 conflict, including significant irrigation infrastructure.
2012-2016	Environmental Protection of International River Basins Project	EU	7,500,000 EUR	To improve water quality in the trans-boundary river basins of the wider Black Sea region and Belarus.
2012-2016	Climate Resilient Flood and Flash Flood Management	UNDP/ Adaptation Fund	5,060,000 USD	The project objective is to improve resilience of highly exposed regions of Georgia to hydro-meteorological threats that are increasing in frequency and intensity as a result of climate change. The project will help the governments and the population of the target region of Rioni Basin to develop adaptive capacity and embark on climate resilient economic development.
2013-2015	Pilot Project for Introduction of an Information System for Data Transferring and Groundwater Monitoring Network in Kvareli and Lagodekhi Municipalities	Czech Development Agency	40,000 EUR	The pilot study for introduction of the groundwater monitoring information system and well registration will provide complex idea about possibility of modernization of the national monitoring network as whole.
2011-2015	Enhanced preparedness of Georgia against extreme weather events	Czech Development Agency	12,629,040 CZK	Project significantly contributes to the preparedness of Georgia for extreme weather changes through expansion and modernization of National Environmental Agency's meteorological and hydrological monitoring network.
2013-2014	Improving Environmental Monitoring in the Black Sea (EMBLAS)	EU/UNDP	1,060,000 EUR/353,333EUR for Georgia	The project will strengthen national capacities of the respective national authorities for biological and chemical monitoring of water quality in the Black Sea, in line with EU water related legislation - EU Water Framework Directive and Marine Strategy Framework Directive. It is a preparatory phase for a larger technical intervention in the Black Sea region.
2011-2014	Reducing Transboundary Degradation of the Kura Aras River Basin	UNDP/GEF	960,000 EUR	To assist the countries of Armenia, Azerbaijan and Georgia to reduce trans-boundary degradation in the Kura – Ara (k) s River Basin.
2012-2013	Transboundary River Management for the Kura River Basin Phase III	EU	4,000,000 EUR	To improve water quality in the Kura River basin through trans-boundary cooperation and implementation of the river basin management approach.
2008-2011	management of Water Resources in the Region of South Caucasus	EU	4,000,000 EUR. 1,700,000 EUR for Georgia	To improve water quality in the Kura River basin through trans-boundary cooperation and implementation of the river basin management approach.
2001-2003	Joint Programs of Management of the Basin of Kura River	EU/TACIS	4,000,000 EUR	To test the application of Guiding Principles of UNECE on monitoring and assessment of conditions of trans-boundary rivers.
2005-2008	South Caucasus for Water Program	USAID	4,200,000 mln USD	To increase capacity in the South Caucasus Region to manage trans-boundary water resources.
2002-2004	Management of Water Resources in the Region of South Caucasus	USAID	4,000,000 USD	To increase the dialogue for sustainable water management in the South Caucasus' countries of Armenia, Azerbaijan, and Georgia.

Year	Project	Donor	Budget	Objective
2010	Ensuring safe drinking water in the buffer zone (Georgia)	Czech Development Agency	9,674,189 CZK	The project addresses the unsustainable drinking water conditions in the "buffer zone" – border area with so-called South Ossetia, north of Gori. The project is based on the requirements of partners - the beneficiary of the project. The project will supply drinking water to six villages from the source located approximately 100 meters below the surface.
2010	Strategic Development Plan of laboratory activities in field of monitoring the quality of drinking water in Georgia	Czech Development Agency	952,524 CZK	The project aim is to create a development plan for the laboratory testing of drinking water throughout Georgia in order to gradually meet the requirements of WHO and national legislation. Further targets are the knowledge raising of workers of United Water Supply Company of Georgia, a modern and effective procedures for monitoring the quality of drinking water, and provision of modern equipment and instrumentation options development and management of water laboratories.
2010-2012	Implementation of the UNECE Water Convention and Development of an Agreement on the Management of Trans-boundary Watercourses Shared by Georgia and Azerbaijan	ENVSEC	85,830 EUR 30,000 EUR - For Georgia	To Support to establish a bilateral water agreement between Georgian and Azerbaijan and to support Georgia for the preparation of the ratification and the implementation of the UNECE Convention of the Protection and Use of Trans-boundary Watercourses and International Lakes. Water quality of the shared waters is one important issue.
Feb-Dec 2013	Implementation of the UNECE Water Convention: Finalization of an agreement on the management of trans-boundary watercourses shared by Georgia and Azerbaijan	ENVSEC	Total Budget: 16,810 EUR Total Grant For Georgia: 8,405 EUR	The project will be implemented within the framework of the Environment and Security Initiative. The project objective is to assist the Governments of Azerbaijan and Georgia in finalizing the bilateral agreement on the Kura River basin and to facilitate its signature.
2010-2013	National Policy Dialogue in Georgia on Integrated Water Resources Management	UNECE	28,000 USD	Preparation of Strategic package within the framework of national political dialogue on integrated management of water resources.
Jan 2010- Jun 2011	Fostering trans-boundary cooperation in the Kura-Aras River basin	UNDP/ ENVSEC	133,772 USD	The project supports Armenia, Azerbaijan and Georgia in continuing their dialogue on institutionalizing cooperation in the Kura-Aras River basin by developing and presenting potential options and drafting documents which would lead to the establishment of the Kura-Aras Environment Programme.
2008-2010	Water Governance in Western EECCA countries	EU	2,300,000 EUR	It aims at helping to reduce pollution, foster fair sharing and effective use of scarce water resources and to improve the quality of shared water resources, such as trans-boundary rivers. The project seeks to improve, implement and enforce water legislation as well as contribute to convergence on EU standards.
2002-2008	Science for Peace Program - South Caucasus River Monitoring	OSCE/NATO	1,755,898 USD	The project aimed at establishment of a transboundary river monitoring infrastructure system shared by Armenia, Azerbaijan and Georgia.
2012-2013	Support of the implementation process of the EU Directive on assessment of the flood risks into the legislation in Georgia	Slovak Aid Agency	80,800 EUR	Improvement of the implementation of the EU Flood Directive in Georgia and to enhance the flood management and crisis management in Georgia

Year	Project	Donor	Budget	Objective
2009-2011	Upgrade Black Sea Scene Project	EU	36,000EUR	To the development of a scientific network of leading environmental and socio-economic research institutes, universities and NGOs from the countries around the Black Sea, contributing to a growing data and information infrastructure.
2010-2011	Implementation of the Strategic Action Plan for the Protection and Rehabilitation of the Black Sea	BMZ	190,000 EUR	Support the Georgian Environment Ministry in integrating the present regional agreements into the National Environmental Action Plan (NEAP) and the National Biodiversity Strategy and Action Plan (NBSAP).
2008-2009	Supply of Equipment for Kura River and Water Governance projects	EU	2,000,000 EUR	to supply equipment for biological and chemical monitoring of river water quality including boats and vehicles
2007-2010	Creation of an Enabling Environment for Integrated Management of the Kura-Aras Trans-boundary Rivers Basin	EU	400,000 EUR	to promote the establishment of a regional coordination body for integrated management of the trans-boundary Kura-Aras rivers basin

Investment Projects

Year	Project	Donor	Budget	Short Description
2014-2019	Regional and Municipal Infrastructure Development Project	WB	58,930,000 USD	The project development objective is to improve the efficiency and reliability of targeted municipal services and infrastructure. This will be achieved by investing in high-priority local infrastructure improvements, and by supporting local self-governments in enhancing their capacity and systems for service delivery.
2008-2014	Regional and Municipal Infrastructure Development Project	WB	65,000,000 USD	The project development objective is to improve the efficiency and reliability of selected municipal services by rehabilitating high priority infrastructure, and building the capacity of participating local governments to provide sustainable services.
2014-2019	Irrigation and Land Market Development Project	WB	50,000,000 USD	The objective of the Irrigation and Land Market Development Project for Georgia is to: (i) improve delivery of irrigation and drainage services in selected areas and (ii) develop improved policies and procedures as a basis for a national program of land registration. The second component is the land market development. The component will finance the pilot phase of a land registration program in order to redefine and test the policies and procedures for registration of agricultural land ⁴ that will allow the majority of existing land ownership rights to be registered (regularization).
2012-2016	Regional Development Project	WB	75,000,000 USD	The objective of the Regional Development Project for Georgia is to improve infrastructure services and institutional capacity to support the development of a tourism-based economy and cultural heritage circuits in the Kakheti region.
1994-2000	Municipal Infrastructure Rehabilitation Project: First and Second Municipal Development and Decentralization Project	WB	19,600,000 USD	The long-term objective was to provide a foundation for future reforms aimed at improving overall management and delivery of crucial municipal services.

Year	Project	Donor	Budget	Short Description
2001-2009	Irrigation and Drainage Community Development Project	WB	32,000,000,+16,000,000 USD additional funding	The objective of the component is to increase agricultural production and farm income of private agriculture by arresting further deterioration of irrigation and drainage infrastructure and keeping the operable infrastructure functional to some degree
2013-2018	Water Infrastructure Modernisation II	EIB	40,000,000 EUR	Refurbishment and upgrading of municipal water facilities in Georgia.
2010-2014	Water Infrastructure Modernization	EIB	40,000,000EUR	Mainly small scale investment schemes for leakage detection, metering, rehabilitation of the water distribution network, energy efficiency and sewerage system rehabilitation.
2010-2016	EIB-03 Technical Assistance for the Water Infrastructure Modernization and Development Project	EU	4,160,000 EUR	Water supply and sanitation - large systems
2010-2011	Developing an Urban Water Supply and Sanitation Sector Strategy and Regulatory Framework for Georgia	ADB	863,000 USD	The TA supports the Government's development agenda and water and wastewater development policy framework. The Government aims to improve water supply and sanitation service delivery through effective implementation of legal, economic, and financial frameworks for local self-governance. ADB's interim operational strategy (2008-09) is also in line with the Government's agenda and identifies support to developing the country's municipal infrastructure a key contributor to enhancing sustainable economic growth, with the cross cutting themes of governance, regional cooperation and environmental protection. The TA will provide directions to the Government in developing a strategic vision for the sector and to effectively implement its reform agenda. While developing the urban WSS sector strategy and road map, the Government will develop an investment plan and create a business climate for donors and co-financiers to invest in the sector.
2009-2014	Municipal Services Development Project - Phase 2	ADB	30,000,000 USD	The proposed Municipal Services Development Project - Phase 2 (MSDP 2) finances investments in municipal infrastructure and utility services. It focuses on urban transport, but could flexibly respond to other municipal infrastructure
2008-2013	Municipal Services Development Project	ADB	40,000,000	The objective of the Project is assist project municipal governments to improve delivery of basic urban services. The Project comprises two components: investment projects and capacity development. The outputs of the investment component are loans and grants to municipalities and local utility companies to improve basic urban services and infrastructure.
2011-2014	Urban Services Improvement Investment Program	ADB	500,000,000 USD	The Urban Services Improvement Investment Program was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services
2010-2011	Developing a Geospatial Urban Water Supply and Sanitation Utility Management System	ADB	850,000 USD	The capacity development TA will produce geospatial management systems for Water Supply and Sanitation and Urban Transport UT in selected cities. The GIS based database and management system for WSS utility will facilitate infrastructure design, improve service delivery and enhance UWSCG's revenues in the long-term. It will provide a geospatial (or GIS) interface for decision makers

Year	Project	Donor	Budget	Short Description
2011-2012	Promoting Gender-Inclusive Growth in Central and West Asia Developing Member Countries: Information Education Campaign on Water, Sanitation and Hygiene in Marneuli and Mestia	ADB	4,500,000 USD	Considering the expertise of WIC in dissemination of information and targeting women throughout Georgia, WIC was selected as a partner organization of ADB for implementing a pilot project on water and sanitation as a part of the gender action plan of the Urban Services Improvement Investment Program. The program covers 6 secondary towns of Georgia; however, as a pilot initiative, two towns—Marneuli and Mestia—had been selected for conducting an Information-Education Campaign on Water, Hygiene and Sanitation.
2006-2008	Water Supply and Wastewater	EBRD	11,000,000 EUR	The proposed project entails rehabilitation of the water and wastewater supply network
2011-2016	KfW-06 Neighborhood Investment Facility -funded components of the project of Rehabilitation of Municipal Infrastructure Facilities in Batumi – Phase III (Water supply and sewerage of Batumi and surrounding villages)	EU	4,200,000 EUR	To rehabilitate municipal infrastructure facilities in Batumi and surrounding villages for the purpose of improving the water supply, sewerage and wastewater disposal situation.
2011-2013	Assisting Rural Communities through Effective Water Management and Irrigation	EU	100,000 EUR	To Assist rural communities in effective water management and irrigation.
2012-2013	Ensuring the Improvement of the Mtkvari River Management in Tbilisi Area	EU	187,820 EUR	Comprehensive assessment of the Mtkvari River current situation and contribution to Tbilisi development and possible improvement. It will be expected that the project proposes a strategic approach towards the sustainable use of Mtkvari River basin in an urban development perspective. Recommendations on specific issues like the use of lakes and islands and recreational opportunities or the role of the river as a major artery for city life will be provided.
2012-2013	Support to confidence-building through rehabilitation of water-related infrastructure	EU	942,368 EUR	The project aims at: i) Completing and complementing the EU-funded rehabilitation activities undertaken in 2010-2011 within the framework of the Geneva Discussions at the Zonkari dam (dam safety), in Znauri (potable water) and at the Nikosi pumping station (irrigation); and ii) Undertaking feasibility studies and design work in view of potential future water projects: supply of potable water to Tskhinvali from the Zonkari area and resumption of a supply of potable water to the Gori valley.

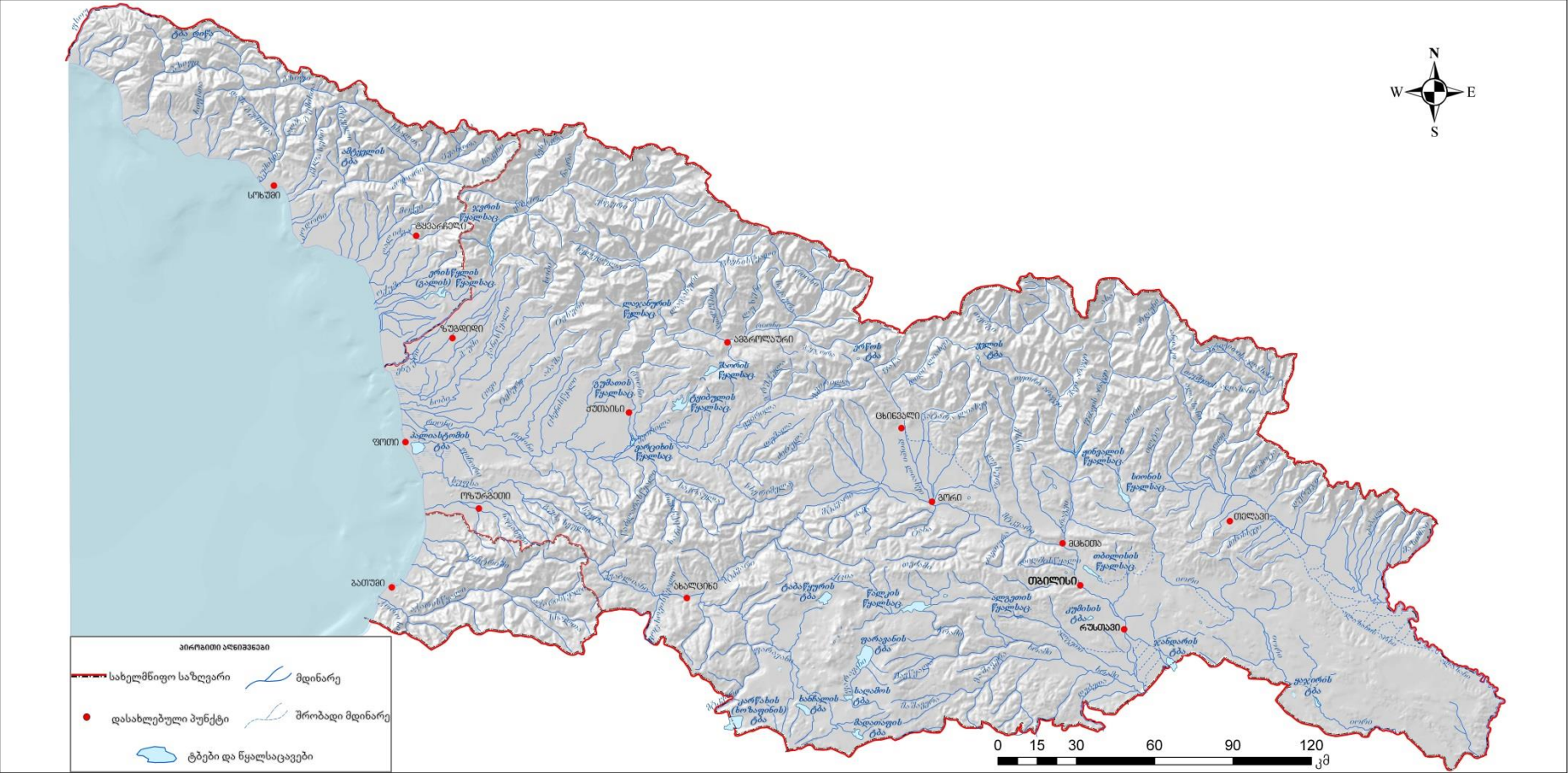
ANNEX 2 POTABLE WATER SUPPLY LICENSED COMPANIES AS OF JANUARY 2014 ⁵⁹

Company	Coverage Area	Ownership
Georgian Water and Power LTD	Tbilisi, Potable Water and Waste Water	Privately Owned
Rustavi Water Company LTD	Rustavi, Potable Water and Waste Water	Privately Owned
Mtskheta Water Company LTD	Mtskheta, Potable Water and Waste Water	Privately Owned
Batumi Water Company LTD	Batumi, Potable Water and Waste Water	Local Government
Marneuli Village Water Company LTD	Marneuli District, Potable	Local Government
United Water Supply Company of Georgia LTD	The company provides water and wastewater services throughout whole Georgia except Tbilisi, Mtskheta, Rustavi and Autonomous Republic of Adjara	State
Sachkhere Water Company LTD	Sachkhere District	Local Government
Qobuleti Water Company LTD	Qobuleti District	Local Government
Qobuleti Village Water Company LTD	Qobuleti village	Local Government
Shuakhevi Water Company LTD	Shuakhevi District	Local Government
JSC Sanatoriumi Likani	Likani	Privately Owned
Soguri LTD	Tbilisi	Privately Owned
Qeda Water Company LTD	Qeda District	Local Government
Khulo Water Company LTD	Khulo District	Local Government
Khelvachauri Water Company LTD	Khelvachauri district	Local Government

⁵⁹ GNERC Annual Report 2013.

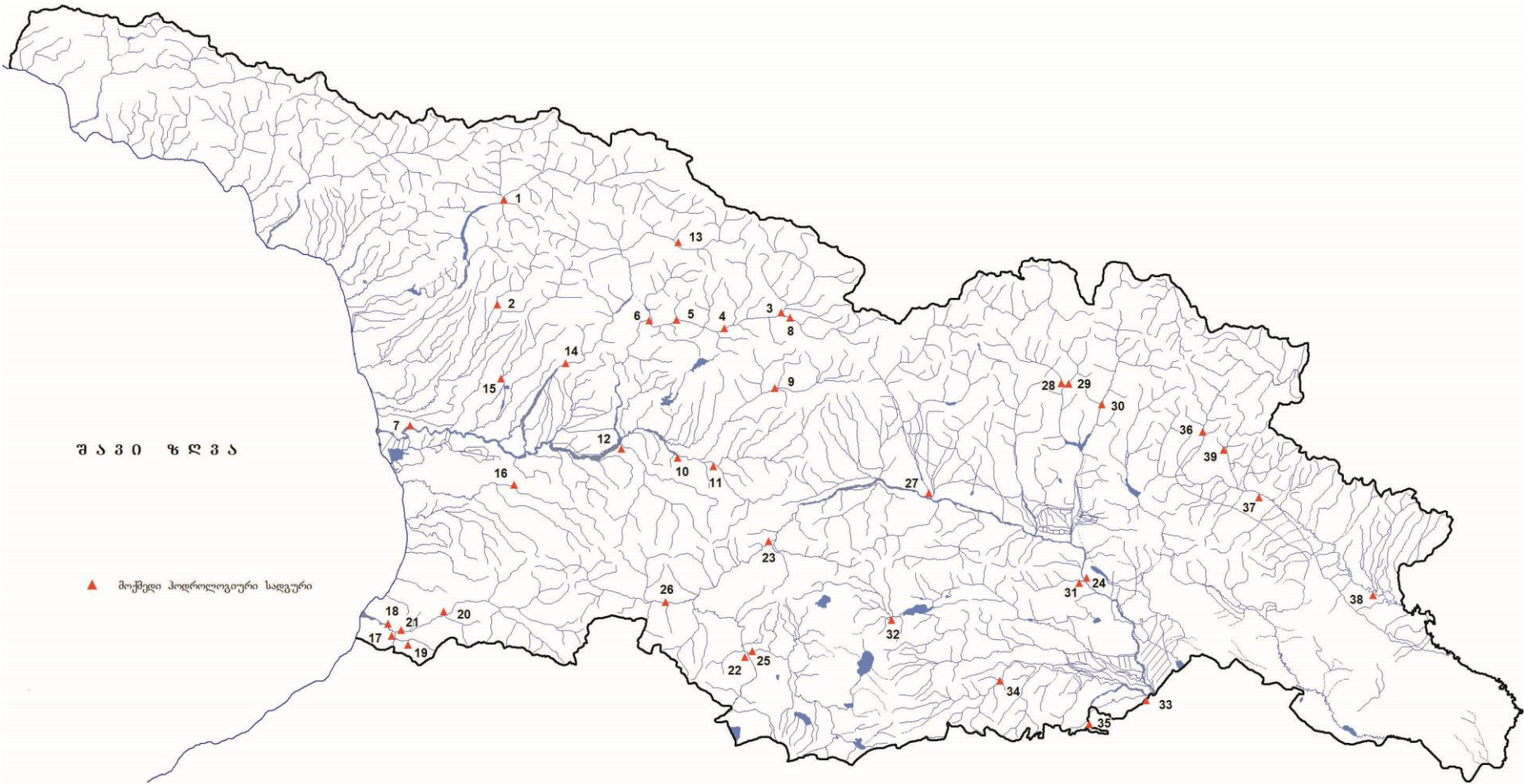
ANNEX 3 MAPS

Hydrological Map of Georgia



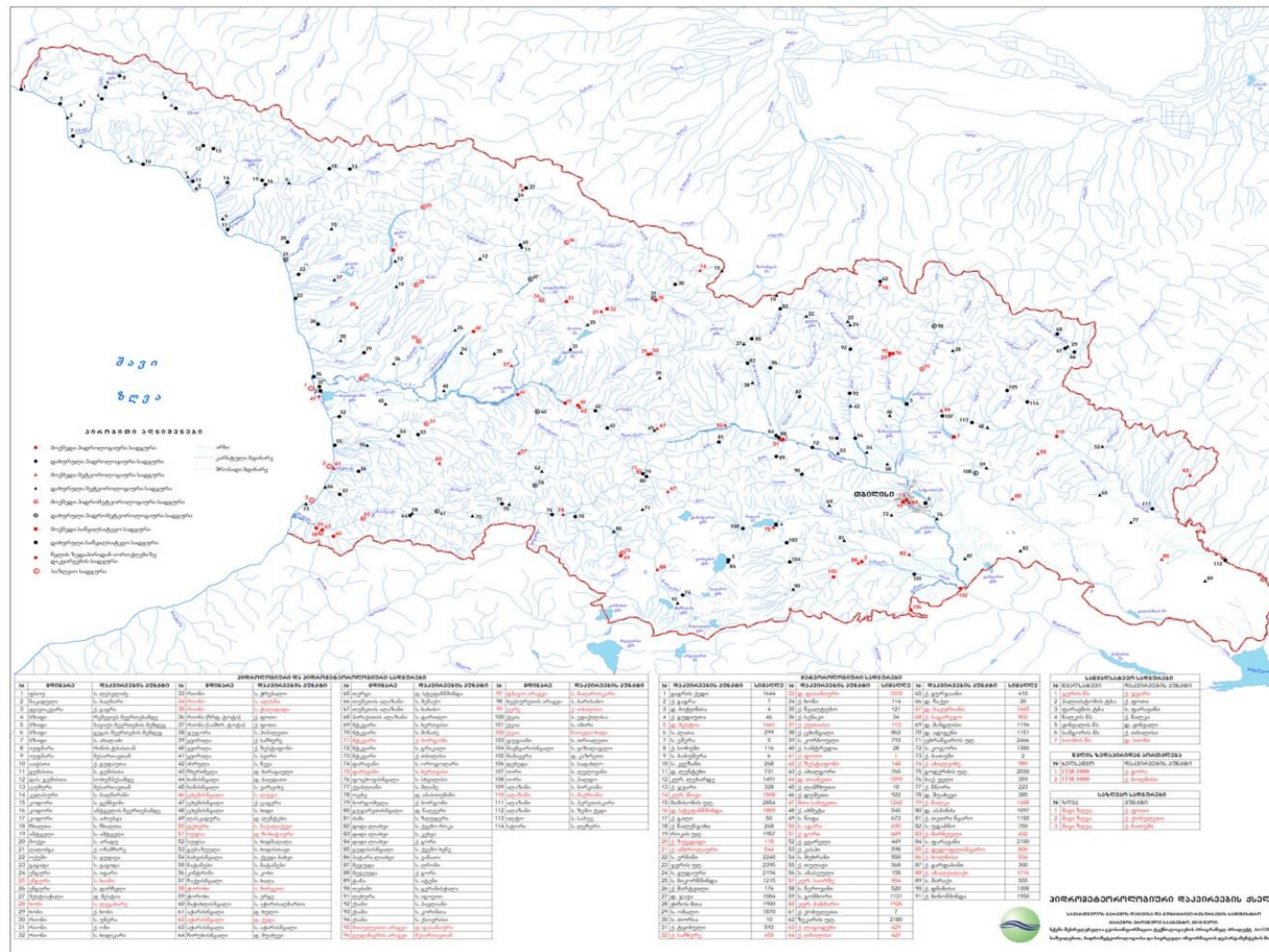
Source: <http://moe.gov.ge/>

Water Pollution Monitoring Network



Source: <http://moe.gov.ge/>

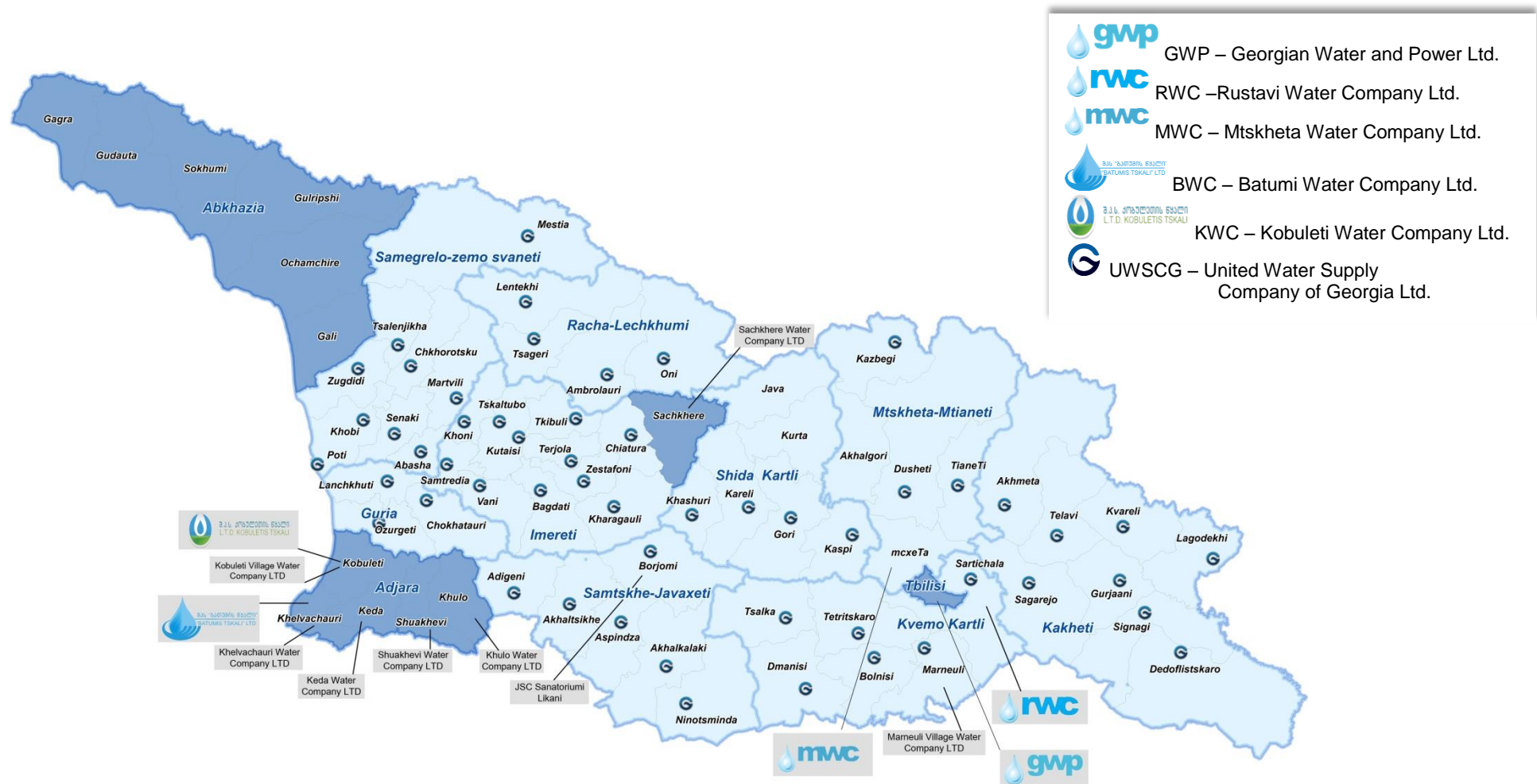
Map of Current and Previous Network of Hydro-Meteorological Observation in Georgia⁶⁰



Source: <http://meteo.gov.ge/images/sagushagoebi.jpg>;

⁶⁰ In red color current stations are shown, black color shows past (abolished) stations

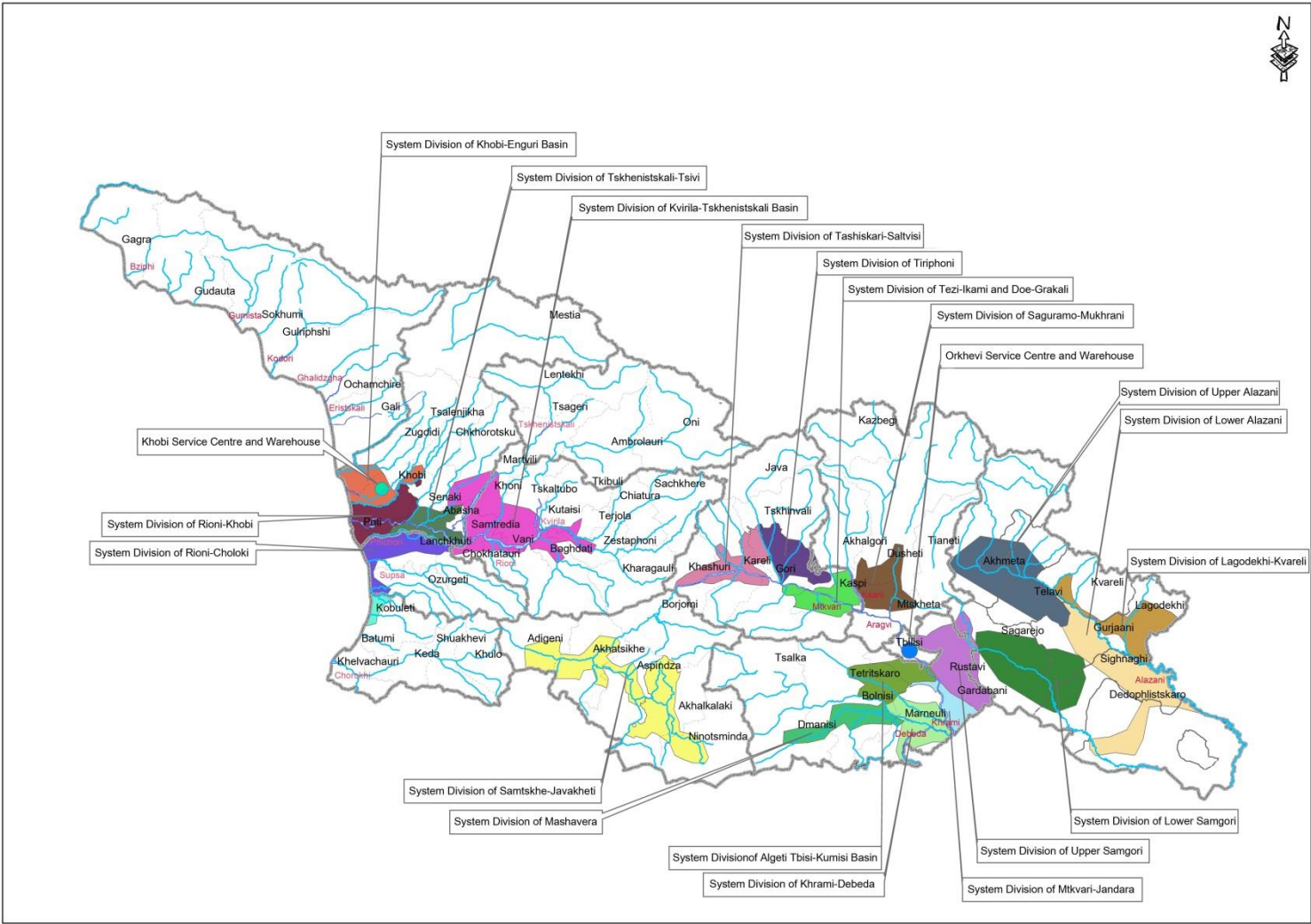
Distribution of Water Supply Licensed Companies Across Georgia⁶¹



Source: www.water.gov.ge

⁶¹ Logos of other companies added to activity map of UWSCG.

Distribution of Divisions of the LTD “United Melioration Systems Company of Georgia”



Source: www.melioration.ge

ANNEX 4 STATISTICAL FORM 4-I-01

State Accounting of water use – statistical form #4-I-0

State accounting of water use

Full name, postal index, address and form of ownership _____
 Contact phone number _____ Organizational-legal form _____

 _____ Main activity _____

 _____ (specific activity)

Violation of the rules of State Accounting, i.e. falsification of initial data of statistical observation, their non-submission in established form and time terms will be subject to a penalty
 The Code of Georgia of Administrative Violations (Article 177²)

Confidentiality of the provided information is ensured by the Law of Georgia on Statistics

State Statistical Accounting Form # 04-I-01

annual

approved by

by the order #63 of November 3, 2004 of the
State Department of Statistics of the Ministry of
Economic Development of Georgia

to be submitted by water users to the territorial
bodies of the Ministry of Environment and Natural
Resources not later than January 15 after the
end of reporting year

to be filled by environmental agency		CODE
1	by water user	
2	territory	
3	main activity according to NACE-001-97	
4	form of ownership	
5	organizational-legal form	
6	water district	
7	statistical ID of water user (enterprise, organization)	
8	checksum (1+2+3+4+5+6+7)	

Data on water use 200---

Series and number of a license on water use

water (surface and underground) intake		
water discharge		

Report is presented in _____ form
form # _____

Table 1. Water taken from natural sources, received from another user, used and transferred
(thousand m³)

1. name of the source	2. code of source type or transferor water user		3. Code of water body (water source)	4. Code of the water quality category	5. Distance (km) from estuary
6. Total taken or received per year	7. by months				
	January	February	March	April	May
				June	July
					August
					September
					October
					November
					December
8. used water, total	including for following needs		transferred to another user without use		
9. drinking-household			15. code		
10. industrial			16. quantity		
11. regular irrigation			after use		
12. rural water supply			17. code		
13. hydroelectric power plants			18. quantity		
14. fisheries			19. transportation losses		

State accounting of water use

Full name, postal index, address and form of ownership

Contact phone number

Organizational-legal form

Main activity

(specific activity)

Violation of the rules of State Accounting, i.e. falsification of initial data of statistical observation, their non-submission in established form and time terms will be subject to a penalty
The Code of Georgia of Administrative Violations (Article 177²)

Confidentiality of the provided information is ensured by the Law of Georgia on Statistics

State Statistical Accounting

Form # 04-I-01

annual

approved by

by the order #63 of November 3, 2004 of the
State Department of Statistics of the Ministry of
Economic Development of Georgia

to be submitted by water users to the territorial
bodies of the Ministry of Environment and Natural
Resources not later than January 15 after the
end of reporting year

to be filled by environmental agency		CODE
1	by water user	
2	territory	
3	main activity according to NACE-001-97	
4	form of ownership	
5	organizational-legal form	
6	water district	
7	statistical ID of water user (enterprise, organization)	
8	checksum (1+2+3+4+5+6+7)	

Data on water use 200---

Series and number of a license on water use

water (surface and underground) intake

water discharge

Report is presented in _____ form
form # _____

Table 1. Water taken from natural sources, received from another user, used and transferred
(thousand m³)

(thousand m³)

1. name of the source									
2. code of source type or transferor water user		3. Code of water body (water source)		4. Code of the water quality category		5. Distance (km) from estuary			
6. Total taken or received per year		7. by months							
		January		April		July		October	
		February		May		August		November	
		March		June		September		December	
8. used water, total				transferred to another user					
including for following needs				without use					
9. drinking-household				15. code					
10. industrial				16. quantity					
11. regular irrigation				after use					
12. rural water supply				17. code					
13. hydroelectric power plants				18. quantity					
14. fisheries				19. transportation losses					

ANNEX 5 NUMBER OF BODIES REPORTING WATER USE BY FIELD OF ENTREPRENEURIAL ACTIVITIES

Indices of polluted, normatively clean, purified wastewater and transit water by field of entrepreneurial activities, million m³, 2008.⁶²

Industry fields	Number of Accountable Water Users	Discharged			
		Polluted wastewater	Clean Wastewater	Purified wastewater (according standards)	Transit Waters
Total in Georgia	800*	614.147	28,461.56	13.846	275.532
Agriculture	38	0.073	19.826	0.01	275.532
Irrigation systems	27*	0.062	19.826		275.532
Fishing industry	70	1.847	4.841	1.575	
Industry (except power generating)	303	1.317	7.094	9.228	
Food industry	90	0.094		3.813	
Oil products	2				
Chemical industry	15	0.109		0.787	
Construction materials	18	0.087	0.01	0.072	
Metallurgy	3		7.038		
Production of electric equipment	2				
Power generating (Thermal station)	38*	255.704	28429.77	0.004	
Natural gas	1	0.001			
Water supply system (sewerage system)	126*	353.898	0.026	0.352	
Construction	6	0.068		0.086	
Trade	87	0.096			
Hotels and restaurants	26	0.020		0.021	
Transport and communication	56	0.338		2.543	
Commercial activities	1				
Health	37	0.765	0.001		
Everyday repairs and other services	11	0.019			

* Calculated numbers might differ

* For 2014 Total Number of Accountable Water Users might differ.

⁶² CENN Assessment of the Existing Infrastructure Relevant to a National PRTR par. 1.2.1 Indices of pollutants discharged with wastewater in terms of regions and cities and field of entrepreneurial activities.

ANNEX 6 TARIFFS APPROVED BY THE GNERC⁶³

Category	Unit	UWSCG	GWP	MVW	SW	Soguri
Residential (Metered)	GEL/m ³	0.355	0.91	0.333	0.273	0.071
Residential (Un-Metered)	GEL/person/month	1.704	2. 259	1.398	1.432	0.847
Non-Residential						
Government	GEL/m ³	2.86	2.966	2.652	2.643	4.155
Commercial/Industrial						
Residential (Metered)	GEL/m ³	0.068	0.034		0.085	
Residential (Un-Metered)	GEL/person/month	0.326	0.408			
Non-Residential						
Government	GEL/m ³	0.79	0.763		0.824	
Commercial/Industrial						

ANNEX 7 LIST OF MAJOR UWSCG NON-RESIDENTIAL CLIENTS⁶⁴

Name	Monthly consumption, m3
Georgia Ministry of Defense	128.101
Madneuli	112.222
Georgian Manganese	74.648
Georgia Ministry of Corrections and Legal Assistance	42.236
Poti Port	9.953
Interventional Medicine Centre in Kutaisi	7.788
JSC —Glass	5.157
Kutaisi Mother and Child Clinic	3.157
Border guards' coastline defense department	1.795
Marneuli food processing factory	1.171

⁶³ GNERC resolution #17 on "Potable Water Supply Tariffs".

⁶⁴ ADB Final Report Output 2 – Social & Gender Development Strategy.

ANNEX 8 STRUCTURE OF MANUFACTURING SECTOR⁶⁵

Industry	Production Value USD million	Top 3 Product (Value Added)	Top 3 Exports	Top Companies By Production
Food and Beverages	1322	Grain mill products	Nuts	IDS Borjomi
		Mineral waters & soft drink	Spirituos beverages	Lomisi
		Wine	Wine	Agara Company
Metals	644	Ferro-alloys	Ferro-alloys	Georgian Manganese
		Basic precious & non-ferrous metals	Gold	GeoSteel
		Fabricated metal product	Coper ores and concentrates	Rustavi Steel
Non-metallic Mineral products	439	Cement	Cyanides, cyanide oxides and complex cyanides	Hidelsberg Cement Georgia
		Articles of concrete, plaster and cement	Cement	Qartuli Cementi
		Cutting, shaping and finishing of stone	Articles of plaster, cement or similar materials	Knauf
Chemicals	276	Basic chemicals	Fertilizers	Rustavi Azot
		Pharmaceuticals	Pharmaceuticals	GMP
		Coloring materials	Soap, Cleaning and Polishing preparations	Aversi
Transport Equipment	81	Railway & tramway locomotives	Rail locomotives	Elmavalmshebeli
		Parts of Aircraft	Parts of Aircrafts	Vagonmshebeli
		Ships	Self-propelled Railway	TAM Tbilaviamsheni
Rubber & Plastics	92	Plastic products	plastics	Caucasian Pet Company
				Alfa Pet
				AA Plast
Wood & Paper	196	Printing	Wood	Star RG
		Publishing	Paper	Kviris Palitra
		Sawmilling and planning of wood, Impregnation of wood	Books, Pictures, Magazines	Palitra L
Textile & leather	66	apparel	Apparel	Ajara Textile
		textiles	Textiles	BTM Textile
		footwear	Footwear	BatumiTex
Machinery, Equipment & others	181	Furniture	Machinery and Mechanical Appliances	Embawood Georgia
		Machinery for the production & use of mechanical power	Furniture	OGT
		Electric motors, generators & transformers	Telephone Sets	Saqenergoremonti

⁶⁵ "Manufacturing" Georgian National Investment Agency 2014.

ANNEX 9 PROPOSED ELECTRICITY GENERATION HYDROPOWER PLANTS UP TO 2020.

NAME	Region	River	Installed Capacity MW	Average Annual Generation (GWh)	Commence ment of Operations
Abuli HPP	Samtske-Javakheti	Paravani	22.0	116.0	2016
Alpana HPP	Samegrelo-Zemo Svaneti	Rioni	93.0	360.0	2020
Arakali HPP	Samtske-Javakheti	Paravani	9.0	48.0	2016
Dariali HPP	Mtskheta-Mtianeti	Tergi	108.0	521.0	2016
Debeda HPP	Kvemo-kartli	Debeda	2.5	13.0	2016
Erjia HPP	Samegrelo-Zemo Svaneti	Tekhuri	29.0	133.7	2019
Goginauri HPP	Adjara	Modulistskali	1.8	9.3	2016
Kasleti 1 HPP	Samegrelo-Zemo Svaneti	Kasleti	8.0	46.0	2019
Kasleti 2 HPP	Samegrelo-Zemo Svaneti	Kasleti	8.0	46.0	2018
Khelvachauri 1 HPP	Adjara	Chorokhi	47.0	230.0	2017
Khelvachauri 2 HPP	Adjara	Chorokhi	29.0	129.0	2018
Khobi 1 HPP	Samegrelo-Zemo Svaneti	Khobistskali	60.0	320.0	2020
Khobi 2 HPP	Samegrelo-Zemo Svaneti	Khobistskali	55.0	260.0	2017
Kintrishi HPP	Adjara	Kintrishi	5.0	30.0	2016
Kirnati HPP	Adjara	Chorokhi	51.0	219.0	2017
Koromkheti HPP	Adjara	Acharistskali	150.0	463.0	2020
Lakhami HPP	Samegrelo-Zemo Svaneti	Lachami	22.3	98.0	2019
Larakvakva HPP	Samegrelo-Zemo Svaneti	Larakvakva	21.0	67.0	2019
Lechekha HPP	Samegrelo-Zemo Svaneti	Tekhuri	18.4	90.8	2018
Lentekhi HPP	Racha-Lechkhumi-Kvemo Svaneti	Tskhenistskali	81.0	389.0	2018
Luji HPP	Racha-Lechkhumi-Kvemo Svaneti	Tskhenistskali	54.0	326.0	2020
Lukhuni 1 HPP	Racha-Lechkhumi	Lukhumi	12.6	66.1	2019
Lukhuni 2 HPP	Racha-Lechkhumi	Lukhumi	17.2	73.6	2017
Lukhuni 3 HPP	Racha-Lechkhumi	Lukhumi	10.0	46.0	2020
Matchakhela 1 HPP	Adjara	Machakhela	24.0	138.0	2019
Matchakhela 2 HPP	Adjara	Machakhela	19.0	100.0	2019
Mestiatchala 2 HPP	Samegrelo-Zemo Svaneti	Mestiatchala	20.0	84.6	2018
Mtkvari HPP	Samtske-Javakheti	Mtkvari	53.0	269.0	2017
Mukhra HPP	Racha-Lechkhumi-Kvemo Svaneti	Tskhenistskali	61.0	305.0	2018
Nabeglavi HPP	Guria	Gubazeuli	1.9	13.0	2014
Okropilauri HPP	Adjara	Tbetistskali	1.8	9.4	2016
Pshavela HPP	Kakheti	Stori	1.9	9.5	2015

NAME	Region	River	Installed Capacity MW	Average Annual Generation (GWh)	Commence ment of Operations
Sadmeli HPP	Samegrelo-Zemo Svaneti	Rioni	135.0	360.0	2020
Samkuristskali 2 HPP	Kakheti	Samkuristskali	22.6	117.0	2018
Shuakhevi HPP	Adjara	Skhalta, Acharistskali	175.0	436.5	2017
Tsageri HPP	Racha-Lechkhumi-Kvemo Svaneti	Tskhenistskali	151.0	724.0	2019
Tskhimra HPP	Samegrelo-Zemo Svaneti	Tekhuri	27.6	134.4	2020
Tskvandriili HPP + Okrili HPP	Samegrelo-Zemo Svaneti	Tskhvandiri	14.0	70.0	2019
Ubisa HPP	Shida kartli	Mtkvari	8.0	40.0	2017
SUM			1630.6	6910.9	

Source: <http://www.energy.gov.ge/>

USAID Governing for Growth (G4G) in Georgia

Deloitte Consulting Overseas Projects LLP

Address: 85 Z.Paliashvili Street, Tbilisi

Phone: (+995 322) 240115 / 16

E-mail: info@g4g.ge